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METROWERKS TO BUY EMBEDIX, FORM LINUX SOLUTIONS GROUP

Retains engineering staff, intellectual property of kernel developer formerly know as Lineo

BY EDWARD J. CORREIA

In its strongest show of Linux support to date, Motorola subsidiary Metrowerks Inc. is acquiring Linux developer Embedix Inc., and will use the company's software and engineers as the basis for a new business unit—the Linux Solutions Group—dedicated to Linux development tools and platforms. Terms of the acquisition were not disclosed.

The tools were more important than the kernel, says Metrowerks' Baratta.

Metrowerks CTO Berardino Baratta said he will retain his current duties and run the new division as its vice president. Baratta said that Embedix was valued not for its work on the Linux kernel, but for its ability to integrate it. "The tools and the overall solution were most important. [Embedix] made a good decision about a year-and-a-half ago when they realized they were not able to compete in the pure kernel [market] because they didn't have the strength and expertise to do pure kernel work. They had strength at integrating

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IBM Shows A Rational Exuberance

Offers $2.1B for life-cycle tools vendor; independent competitors see a boost

BY DAVID RUBINSTEIN

IBM Corp.'s decision last month to acquire Rational Software Corp. for US$2.1 billion rounds out the company's development tools offering with modeling, defect-tracking and version-control capabilities. While the purchase will boost IBM's tools business, several industry veterans claim the buy could be a victory for independent application life-cycle tools vendors, such as Borland Software Corp. and Computer Associates International Inc.

For its part, IBM insists it will continue down the path of supporting standards, developing tools that work not only on IBM's systems but others as well. In fact, senior vice president Steve Mills claimed in a conference call last month that with the Rational acquisition, IBM has bought "a major poker chip at the .NET table. We deliver a large portfolio on Windows. Our approach to the market is heterogeneous and cross-platform."

IBM plans to make Rational the fifth brand within its software group, joining Lotus, Tivoli, DB2 and WebSphere. "Rational will be our flagship brand for development tools," Mills said, adding that IBM takes in roughly US$5 billion per year on sales of development tools. IBM will bring most of Rational's 3,400 employees into the software group, with Rational CEO and co-founder Mike Devlin heading up the Rational division and reporting to Mills.

Mills said the Rational acquisition plays into IBM's "on-demand" strategy of creating for organizations an IT infrastructure that integrates their processes and makes them

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Web Services Momentum Continues

Vendors pushing newer 'standards' to drive movement

BY CHRISTINA M. PURPI AND ALAN ZEICHICK

The phrase "Web services" went from curiosity to ubiquity in 2002. Building on the XML and newer foundation protocols such as the Simple Object Access Protocol (SOAP) and Web Services Description Language (WSDL), Web services found their way out into numerous development tools and deployment platforms, most notably Microsoft's .NET, but also Java/J2EE and other systems.

The past year saw relative stability within those core standards, or of other essential Web services specifications such as Universal Description, Discovery and Integration (UDDI), a directory format for locating available services. Yet, the standards weren't static; SOAP and UDDI both saw minor improvements. But for the most part, developers could count on a stable base, at least of those underlying constructs.

The same was not true of higher-level protocols being layered atop the "four horsemen" of the Web services movement. Forget about standards bodies like the World Wide Web Consortium, OASIS or the Internet Engineering Task Force—ad hoc vendor consortia and individual companies added new specifications first, and only asked for outside input later.

For example, consider the important need to define a business process as a flexible sequence of discrete Web services transactions. Each vendor or vendor consortium had its own ideas, and therefore its own self-proclaimed standards. This year, there was the Web Services Choreography Interface (WSCI), which describes the flow of message exchanges by Web services participating in multistep business processes. The interface, created by BEA, Intalio, SAP and Sun, used the foundation of another consortium's work: BPMI.org's Business Process Markup Language (BPML).

Next came BPEL4WS, or Business Process Execution Language for Web Services, an XML-based flow language that defines how complex business processes should connect and interact via Web services, from

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MICROSOFT: USE VS.NET TO PROGRAM OFFICE 11

BY ALAN ZEICHICK

As Microsoft Corp. prepares for a mid-2003 release of its next-generation office productivity suite, code-named "Office 11," the company also is readying a set of developer tools for building Office applications using Visual Studio .NET.

The Office 11 software was released for its first beta in October 2002, and these tools are intended to ship concurrently with the new office software, according to Joe Andreshak, a product manager for Office.

The reason developers would want to use these new tools, Andreshak claimed, is data integration: "Many back-end systems are disconnected islands of

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Intel Compiles for Hyper-Threading

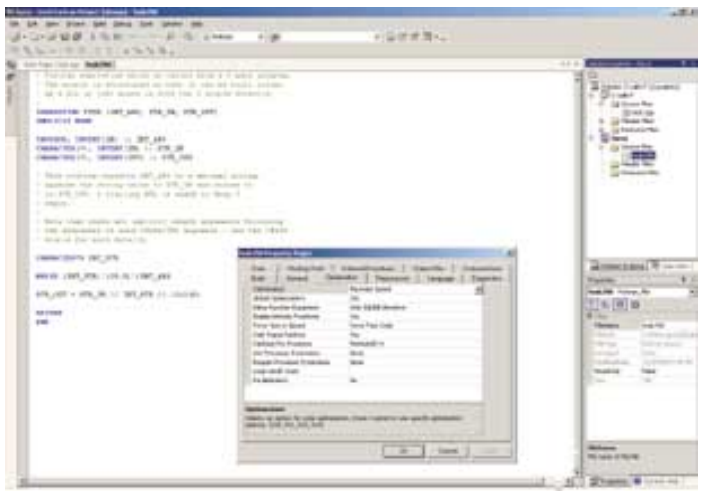
Updated Fortran, C++ tools focus on threading, performance

BY ALAN ZEICHICK

Intel Corp., which recently introduced its Hyper-Threading concept into the desktop world with the release of the 3.06GHz Pentium 4 processor, has upgraded its compilers to accommodate this new chip architecture.

Hyper-Threading is the term Intel uses to describe the limited parallel processing built into its latest 32-bit *x*86 chips, such as its server-class Xeon processors, and now the high-speed Pentium 4 models. Hyper-Threading allows each chip to execute two threads in parallel; and in fact, to operating systems such as Linux and Windows XP, each chip appears to be two separate processors. However, performance is not doubled, since each processor still contains only a single instance of the L1 and L2 caches and processor pipelines, as well as a single front-side bus connection to the rest of the computer.

Version 7.0 of Intel's C++ and Fortran compilers for Linux and Windows are focused specifically on performance, with new optimizations in addition to the Hyper-Threading code, explained Bill Savage, director of Intel's Compiler Lab, which is part of the company's software products division.



New to Intel's Fortran 7.0 compiler is a graphical development environment similar to HP's Compaq Visual Fortran.

The key new compiler option, Savage said, looks within the application for sections of code that can be automatically parallelized, and will automatically split it into threads, so that it will take advantage of the Hyper-Threading processor as well as multiprocessors. "The Hyper-Threading optimized code also can run without modification on uniprocessor *x*86-based computers without Hyper-Threading," he said. "It will work on any target processor; it's not instruction-set dependent."

The Linux compilers also boast increased compatibility with the GNU gcc compiler, with the addition of ABI (applications binary interface) conformance, Savage said. "The kernel and distribution can be built with the Intel compiler, observing all of the source extensions from GNU. There's just a very small number that are not included, but they're documented. We're working closely with GNU to resolve those."

Savage claimed that the compilers are close to ANSI compliance, as well as GNU compatibility. "In ANSI compliance, I think we're one of the leaders; our front-end vendor, EDG, follows the standards closely. Under the ANSI compliance options, you'll get one of the best conforming and strict implementations." EDG is Edison Design Group Inc. (www.edg.com), which sells Fortran and C++ compiler front ends for the OEM market.

The Windows compilers, which can be plugged into Microsoft's Visual Studio .NET development tool, generate native Win32 and Win64 code, said Savage; the company is still investigating whether to target Microsoft's Common Language Runtime. However, he claimed that the Windows C++ compiler does include many of Microsoft's C++ extensions introduced along with .NET. "We comply with the Microsoft [C++] standard," he laughed. "We're source- and binary-compatible, without doing managed code."

For a future version of the compilers, Intel is working to integrate with IBM's Eclipse open-source framework. "We've recently started our work with Eclipse, in anticipation of seeing a lot of developers expressing interest in it," said Savage. "But we haven't seen that yet."

Also new to the Intel compilers is what Savage called a Fortran bridge. "It provides Fortran 7.0 with many of the features of Visual Fortran." Visual Fortran, developed by Compaq, is now offered by HP. "We have a complete integration with Visual Studio, with a colorized Fortran editor, debugger support and command-line compatibility with Visual Fortran." Intel also supports Visual Fortran's compiler extensions, he claimed.

The Fortran and C++ compilers cost US$399 per developer seat. Intel will be offering steeply discounted upgrades to the C++ for Linux 7.0 compiler from its separate KAI C++ compiler, which was discontinued in April 2002, and which the company will support through the end of 2003.

Separately, Savage said that Intel has released a beta version of its VTune performance analyzer that runs natively on Linux. Previously, VTune ran only on Windows; although the company offered a remote data collector for Linux systems, analysis still required a Windows workstation. "This first version is a command-line interface version; it doesn't have the pretty GUI on it, but it has the core analysis capabilities, and it runs natively on Linux." General availability is expected in the first half of 2003. ▮

Modeling Comes Down From Ivory Tower

Government initiatives drive growth in architecture tools

BY DAVID RUBINSTEIN

While vendors and consortia such as Object Management Group Inc. have been working for years to spread the gospel of modeling and architecture, it has taken the actions of the U.S. government to catapult this market sector out of its ivory tower and into the trenches of development.

By requiring agencies to make a better accounting of their assets, and denying outsourcing projects to companies that do not have a plan in place, the government—with the Federal Enterprise Architecture Framework and other initiatives—has put modeling and architecture at the center of its IT philosophy. And, it has helped move the arguments for architecture out of IT departments and into corporate business departments by demonstrating how an effective architecture plan can help integrate the needs of different units with an organization and its trading partners while helping to leverage existing assets in a distributed way.

"There has been a massive cultural change in government, with its work on the Federal Enterprise Architecture," Brad Dashiell, regional sales director for architecture solution provider Agilense Inc., said at the November Integrate 2002 conference in Washington, D.C. "They're slamming all these organizations into the Homeland Security Agency, and they need to inventory all their assets."

Companies such as Popkin Software Inc., MetaMatrix Inc. and Interactive Objects Software GmbH have been advocates for the OMG-defined, platform-independent Model Driven Architecture, and each released products this year that help companies express their business processes in models, separating the business logic from the infrastructure code to facilitate reuse and the easier migration to new and different technologies.

"When will the industry stop letting assembly-line people or the carpenters decide and define how IT management operates?" wondered Richard Hubert, CEO of Interactive Objects. "The tail is wagging the dog. It's absurd."

Interactive Objects released version 3.0 of its ArcStyler modeling suite, which uses UML models to generate source code while leaving developers the ability to edit Java code or Enterprise JavaBeans. Popkin, meanwhile, is making a move for adoption by larger organizations by adding Microsoft's SQL Server 2000 as a highly scalable repository for diagram and definition types. And MetaMatrix has what it claims is the only implementation of OMG's Meta Object Facility (MOF) in its MetaMatrix System, and this year broke out its MetaBase modeling tool and metadata management system into a stand-alone product.

"For MOF to get mainstream, it has to get practical," said Michael Lang, CEO of MetaMatrix. "If it stays theoretical, it'll stay in the ivory tower where it's ensconced."

The Unified Modeling Language is the only metamodel sitting under most modeling tools, Lang said, while the MetaMatrix solution can accommodate any number of metamodels. In the latest release, in August, MetaMatrix added an XML metamodel to support mapping other models to XML schemas, Lang explained. This will be useful, he said, for developers using those protocols for Web services.

Tools based on the UML specification will have to wait some months for UML 2.0, MOF 2.0 and the Object Constraint Language to be finalized by the OMG task force working on it. It could be completed at this month's technical meeting in Burlingame, Calif., but probably will not be finalized until March, said OMG's Jon Siegel.

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Proxy Server Localizes Perforce SCM Software

New remote server reduces WAN bandwidth, improves response time for file revisions

BY ALAN ZEICHICK

With the latest version of its eponymous software configuration management software, Perforce Software Inc. has added a proxy server that caches file revisions and artifacts being read from a headquarters server by remote site developers. Subsequent references to those files or artifacts will then be served from the local cache, rather than retrieved over the slower wide-area network link.

The benefit to this feature in Perforce 2002.2, according to president and CTO Chris Seiwald, is that the proxy not only speeds up response time, but also reduces WAN utilization and can lower the processor workload of the organization's primary SCM server.

While Seiwald admitted that Perforce (www.perforce.com) isn't the first SCM vendor to add a remote-user proxy to its tool, he argued that competing solutions are much more expensive.

As an example, he cited MKS Inc.'s "federated server architecture" for its Source Integrity Enterprise Edition (SIEE), which shipped in September 2002. That solution requires a fully licensed US$8,000 SIEE server in each remote location, as well as a US$2,000 per-site add-on component.

By contrast, said Seiwald, Perforce still requires only a single SCM server to serve as the repository, and does not require that one be installed in the remote locations. For those sites, the company offers the proxy software, called P4P, at no extra cost. Perforce's software is priced per seat, at US$750 per developer; the 2002.2 version began shipping at the end of December.

Another difference is that Perforce's software is a passive cache; it stores files or other artifacts only after they have been requested by a remote user, so only the second and subsequent requestors of an SCM element will see the reduced retrieval time. Changes to the central SCM repository are not actively pushed out to the remote sites in anticipation of their use, or prefetched by the P4P cache software. With MKS' federated architecture, the remote cache is an active element that is kept synchronized with the main SCM repository; therefore, the first requestor of an artifact would often find the item already in the remote cache. Perforce is working on developing that functionality, according to Seiwald. ▮

Latest SwiftMQ Message Queue Adds WebSphere

Company offers IBM users complete JMS

BY EDWARD J. CORREIA

IIT GmbH in early December released SwiftMQ 4.0.1, the latest version of its Java Message Service implementation that it says now offers full support for IBM's WebSphere 5.0. The Bremen, Germany-based company in late November unveiled a full implementation of JMS 1.1 with SwiftMQ 4.0, which added support for XA protocols for two-phase commit transaction processing and integration with JBoss and Java Open Application Server (JONAS) open-source projects.

According to IIT CEO Andreas Mueller, the main advantages of SwiftMQ over messaging systems offered by application-server vendors are completeness and lower cost. "WebSphere uses [IBM's] MQ Series, which is not a full JMS implementation. Other vendors are just tacking client-side message persistence and cryptic reconnect functionalities on their JMS clients," he said. "We're taking a cleaner path. SwiftMQ is cheaper and easier to use, and it plugs into everything. There's no vendor lock-in."

Another major advantage of SwiftMQ, Mueller claimed, is an integrated federated router, which he said can execute applications and automatically re-establish network connections that have been lost.

"You can run one router on every client, and run your application embedded inside the router, and connect all client routers by routing connections. Then you don't need client-side persistence, and [clients] don't need to reconnect," because all message transfers for the JMS client are handled at the routing level," he explained. "Routing is dynamic and supports any topology."

SwiftMQ 4.0.1 (www.swiftmq.com) is available now for US$872 for an unlimited JMS server and one router connection. ▮

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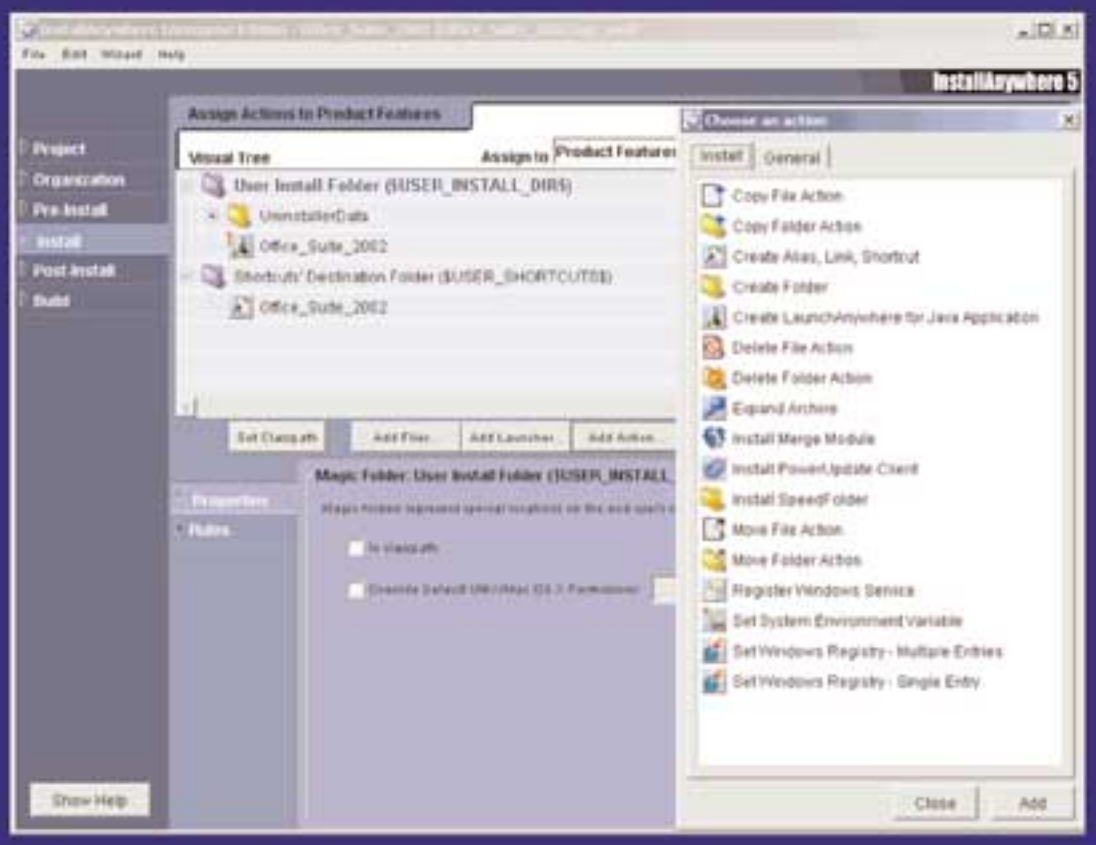

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Brio Introduces Bundled Performance Suite

Combines technologies to offer complete set of enterprise reporting and BI tools

BY CHRISTINA M. PURPI

Brio Software Inc., along with technologies acquired back in 1999 from SQRIBE Technologies, has bundled together its enterprise reporting tools with its business intelligence tools to form the Brio Performance Suite 8.

What is significant about Performance Suite, according to Neil Patil, vice president of product marketing at Brio (www.brio.com), is its common foundation for information management, interaction and security. "We rearchitected all our components under one common foundation," explained Patil. The suite utilizes SQR, Brio's proprietary language and tool for creating reports from data in relational sources as well as in transactional applications such as PeopleSoft and SAP, according to Patil.

Bryan Robertson, senior product marketing manager, explained that the suite is composed of the SQR tool and four additional products.

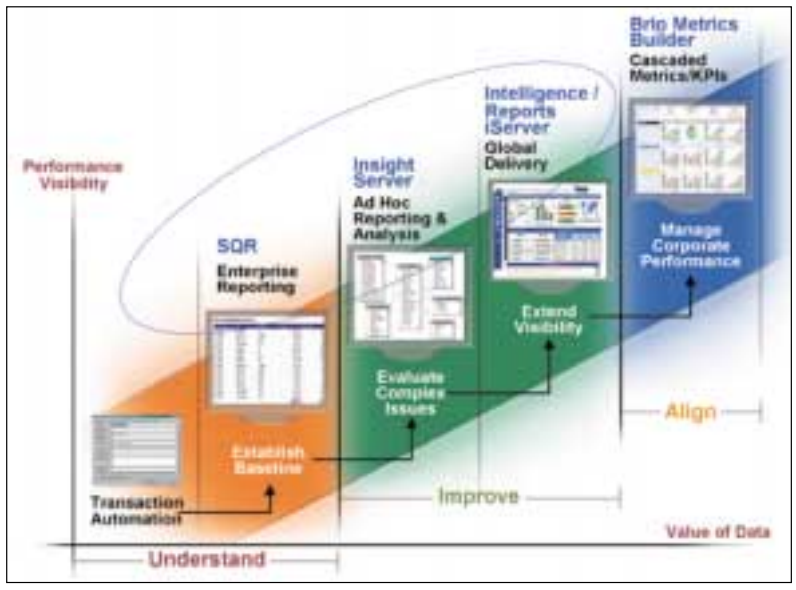
Insight Server is an analytic environment that allows for online and offline analysis. Intelligence iServer has the ability to render content in a zero-footprint thin client. "Just as a report would be rendered as HTML with nothing else required from a user standpoint," said Robertson, "the Intelligence iServer renders analytic content, and puts [the content] out in an HTML environment, as well as maintaining the ability to analyze data."

Reports iServer is a centralized repository for reporting content that combines role-based security and Web-based access with the ability to bring in the component technologies of the rest of the suite for deployment, according to Robertson.

And, Knowledge Server is a search engine designed to seek out content within the foundation. "It's more like Google, rather than Yahoo," he explained.

The benefit, according to Robertson, is that the suite allows developers to "distribute analytic data to users without requiring them to install or manage any software."

The addition of a role-based security mechanism defines who gets access to data and reports and who doesn't based on the person's role in the development team. "That's the challenge of business intelligence—more and more people are asking for data-driven reports and analysis, in addition to wanting pure HTML interactions," said Patil.



Brio's components share a common foundation for information management and security.

Dynamic Execution and Event Services are two additional new features that run jobs and refresh reports or dashboards based upon different parameters of an individual user, according to Patil. Dynamic Execution, said Robertson, is the embedded processing of customizable content within a dashboard or portal itself, as it allows content to be dynamic in nature, while Event Services manages the background execution of things—scheduling jobs, for example. Brio Performance Suite 8 was scheduled to be generally available on Dec. 20, and is sold as a licensed suite, starting at US$150,000 per user, according to Patil. ■

Component Vendors Take Control in Java

ComponentSource, Flashline find partners to ease reuse, create new JWS controls

BY DAVID RUBINSTEIN

Two component vendors have formed alliances to further ease and advance asset reuse in enterprise Java development shops.

ComponentSource and BEA Systems Inc. have partnered for the delivery of new, third-party Java controls for the WebLogic application server and Workshop development framework.

Meanwhile, Flashline Inc. has teamed with Wakesoft Inc. to build reuse systematically into software engineering designs via Wakesoft's J2EE-based Architecture Server.

"We never had controls in the Java space," said ComponentSource CEO Sam Patterson. "The technology wasn't there, and we couldn't make a market out of it."

Patterson said that work on the Java Web Services (JWS) specification, which BEA and Sun Microsystems Inc. submitted to the Java Community Process for approval, laid the foundation for these new controls, which Patterson described as being similar to ActiveX controls in the Microsoft world. While Java applets already are similar to ActiveX controls, there never was a market for commercial off-the-shelf applets, Patterson said. These new controls will define how Java objects should share information in an application in the WebLogic environment, he explained.

Within the JWS specification, Patterson said, "the control spec is what's interesting to us. They're creating a runtime for asynchronous Web services. That's what sealed the deal with BEA. We saw the investment they're putting behind the controls."

ComponentSource is hosting two component galleries that can be accessed through BEA's developer Web site at http://dev2dev.bea.com/code/components.jsp—one housing available J2EE objects and tools that work with BEA's WebLogic, and the other showcasing the controls. ComponentSource also is creating a WebLogic store on its site, at www.componentsource.com/bea.

Among the available controls and components are F5 Networks' Web Services Availability Manager, Infragistics' Jsuite user interface Java components, and Keyoti's CreditCardPack Enterprise JavaBean. Other products are Altova's XMLSpy, Blue Titan Software's WebLogic controls for the Blue Titan Network Director, Fenestrae's Enterprise Mobility Server messaging software, Knowledge Dynamics' KDCalc Java Class spreadsheet engine, and PHDCC's Spy Server Java Servlet. Also, TogetherSoft has made available its ControlCenter modeling and development tools.

The Flashline-Wakesoft alliance will bring Flashline's Component Manager Enterprise Edition into Wakesoft's Architecture Server. The combination will allow developers to build reusable assets and then to manage and measure the reuse of those assets, according to the companies. "Wakesoft's Architecture Server reduces complexities and saves time in the creation of service-oriented architectures and business components that can be reused across projects and throughout the organization," said Flashline vice president for business development Frank McGee in a statement. ▮

IBM HAS NEW VOICE FOR WEBSPHERE

BY EDWARD J. CORREIA

IBM Corp. in late December was scheduled to release WebSphere Voice Application Access, middleware that it claims simplifies the job of voice-enabling existing portals and developing and maintaining new portals built for its WebSphere portal server, and lays a foundation for giving mobile users access to data using a single telephone number.

IBM will offer WebSphere Studio Site Developer 5.0, which combines WebSphere Voice Server and Voice Server Toolkit 3.1 with its Everyplace Access Toolkit portal/portlet development environment, and functional portlets for access to Lotus Notes databases and to Microsoft Exchange. Sample voice portlets for airline schedules, stock quotes and weather reports also are included. The environment supports VoiceXML 1.0 and Java development and is built on Eclipse, the IBM-led open-source development environment.

The solution also reportedly includes a voice aggregator runtime module that exposes voice applications and implements voice menus needed for navigation; numeric alias support for conversion of alphanumeric user IDs to all-numeric IDs for phone keypad access; and telephony connection capability for WebSphere Voice Response or solutions from Cisco or Dialogic.

WebSphere Voice Application Access will be available for Windows 2000 Advanced Server and AIX 5.1; IBM declined to disclose prices. ▮

.NET Goes From Vision to Reality

Microsoft delivers on platform

BY ALAN ZEICHICK

It would be hard to dispute that along with XML-based Web services, the biggest news story in 2002 was the arrival of Microsoft Corp.'s .NET platform. Or, at least, the partial arrival of the platform. After the release of beta software in late 2001, Microsoft delivered the key components of its .NET vision—namely its .NET Framework, Common Language Runtime and Visual Studio .NET development tools—in February 2002. It also has delivered the .NET Compact Framework, a client-side managed-code runtime for Windows CE-based devices.

Still to come: the dedicated server component, called Windows .NET Server. Currently out as a release candidate, it is promised to be delivered in April 2003, along with a revised version of the framework, CLR and VS.NET. Plus, the company still hasn't updated another key portion of its back-office software stack, SQL Server, to fully leverage .NET.

During the past year, .NET has come a long way from the vague Web services-centric vision proffered by Bill Gates & Co. in 2001. Developers are building software that utilizes the so-called .NET languages, such as C# and Visual Basic .NET. One of the reasons is that Microsoft has made VS.NET such a central part of its vision that many developers feel that if they are Microsoft shops, they need to follow along with Microsoft's agenda. But many also believe that loosely coupled Web services will be an essential ingredient for the integration of heterogeneous systems, and that it's better to get started sooner than later.

Bill Gates wants Microsoft software to become trustworthy.

Indeed, addressing the issue of openness, Microsoft has spoken strong words—and has backed them up with almost-as-strong actions. Unlike Sun Microsystems Inc., which maintains a tight grasp on Java and its related specifications, in 2000 Microsoft submitted released specs for its C# language and the Common Language Interface (a subset of the CLR) to ECMA, a relatively neutral vendor consortium. ECMA rubber-stamped them in December 2001, and these technologies have been submitted to a genuine standards body, the ISO (International Organization for Standardization). There they sit, with little progress to date. But those efforts have allowed Microsoft to crow that it, not Sun and its Java Community Process, is committed to openness.

That same openness hasn't translated to source code. Over the past year, Microsoft adopted what it calls "shared source," its alternative to the open-source movement. The big differences: First, you have to be a Microsoft customer and sign strong license agreements to view source code. And second, you can look, but you can't touch; the "shared source" is for education and experimentation only. Customers may not modify Microsoft source code; they may only examine it to understand how certain APIs or functions are implemented. Also in 2002, Microsoft released shared-source implementations of part of the ECMA-ratified CLI and C# compiler for NetBSD and Mac OS X, demonstrating that .NET isn't just for Windows. But unlike its Windows versions of the .NET Framework, the "Project Rotor" subsets of the .NET code may not be used for any commercial applications or deployments.

In mid-2002, Microsoft put together a reviewers' and analysts' workshop designed to show the next steps in the .NET vision. The company, after all, had laid out the original .NET ideas in 2000 and 2001, and the .NET Framework and VS.NET products were now commercially available. Unfortunately, Microsoft was unable to articulate a clear vision for the future. If Step 1 in the .NET process was "wait for Microsoft to deliver the tools and platforms," then Step 2 was "customers should now buy VS.NET and start building Web services applications." Short of demonstrating an XML-enabled version of Office, and two new versions of Windows XP—one for tablet PC, the other for home multimedia players—the company seemed to be more focused on executing its existing version than articulating a future direction.

While 2002 was clearly successful for Microsoft, the company had its share of setbacks. The company had been pushing a project called HailStorm, later named .NET My Services, which offered a Web services-based user authentication scheme that Microsoft would host. HailStorm, which Microsoft expected enterprises to embrace, was designed to offer single sign-on for corporate intranets, as well as make it easier for customers to identify themselves to e-commerce sites. In light of the continuing antitrust trial and never-ending revelations of security flaws in Microsoft's software, customers balked. In response, Microsoft subtly shifted .NET My Services toward a federated architecture,

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MICROSOFT .NET

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where user profiles could be hosted within an enterprise instead of on Microsoft's data center. So far, that approach hasn't proven to be popular either.

Security itself became a major issue for Microsoft in 2002. As the general media reported a steady stream of flaws with Microsoft's new Windows XP, Internet Explorer, Media Player and new server software, the developers in Redmond continued issuing streams of patches—generally with little information about exactly what those patches did. As the chorus of complaints reached a crescendo, Gates issued one of his infamous strategic directives, this time in a memo that instructed all Microsoft developers to take security into consideration when architecting, programming and testing products and tools. (One has to wonder what the official stance on security was for the preceding 27 years of the software company's existence.) The new initiative led to a flood of software patches; only the future will tell if new Microsoft operating systems and applications will prove to be more trustworthy than Redmond's current offerings.

Speaking of trustworthy: In its ongoing battle against the U.S. government and various state attorneys general, Microsoft appears to have emerged relatively unscathed—much to the chagrin of its archcompetitor, Sun. Although the official pronouncement that Microsoft is indeed a monopoly might give its competitors unfettered material for future lawsuits, the federal government has placed a relatively lenient set of restrictions on the company's activity—and has agreed that Microsoft's own board of directors, rather than outside experts or auditors, shall be primarily responsible for ensuring that Microsoft behaves itself in the future. Still, the deal isn't yet finished, and there may be more plot twists in 2003. ▮

MODELING

◂ continued from page 3

Meanwhile, Rational Software Corp. this year released a second modeling tool to go with its venerable Rose tool; XDE Modeler is for use by development organizations using Rational's XDE Professional within IBM's WebSphere WorkBench and Microsoft's Visual Studio .NET IDEs, while Rose is recommended for developers using other IDEs, according to Rational's marketing director Bill Taylor.

With IBM's acquisition of Rational last month, industry analysts expect XDE will be tied even more closely to the IBM platform. And Sybase Inc. updated its PowerDesigner Studio modeling tool to include support for the full set of UML diagrams and a strengthening of the tool's business modeling capabilities by supporting ebXML.

One of the things that modeling and architecture advocates agree they must do is close the gap between IT and business people within an organization. According to Aberdeen Group research analyst Tim Sloane, TogetherSoft Corp. "did a good job of presenting models to developers. They could do bit-tweaking and the model would re-engineer. It trained them to use the model. Now they just do it at the model level."

However, with Borland Software Corp. spending US$185 million to acquire TogetherSoft in October and IBM shelling out US$2.1 billion for Rational in December, the push toward modeling gets two new—and influential—development companies to beat the drum. ▮

News Briefs

COMPANIES

MontaVista Software Inc. will collaborate with **Texas Instruments Inc.** on developing an embedded Linux platform for TI's OMAP processors, specifically targeting wireless telephony handsets . . . **Hewlett-Packard Co.** has announced that it will be building a set of Web services-related components into **Microsoft Corp.**'s Visual Studio .NET IDE. The components will focus on managing high-availability servers. The company also has pledged to support **IBM Corp.**'s Eclipse open-source tools framework with similar components . . . **IBM Corp.** is bundling **Pervasive Software Inc.**'s Pervasive.SQL embedded database with IBM's CICS for Windows. CICS, or Customer Information Control System, is a transaction system for high-volume applications.

PRODUCTS

Several companies have announced integration or support for IBM Corp.'s **WebSphere 5.0** application server and development tools, including Merant International Ltd., with its **PCVS Dimensions** and **PVCS Version Manager** software-configuration management tools; and Instantiations Inc., with its **CodePro Studio 2.0** set of usability enhancements for the WebSphere Studio IDE. Plus, TogetherSoft Corp., which is in the process of being acquired by Borland Software Corp., has shipped a version of its **Together ControlCenter** specifically for IBM's WebSphere Studio. TCC extends WebSphere Studio with real-time synchronization between models and source code. Also, Bowstreet Inc. has enhanced its **Portlet Factory** to work with WebSphere Studio and IBM's WebSphere Portal server. And Candle Corp. has shipped **PathWAI**, a suite of tools to help developers design, deploy and monitor applications running on IBM's WebSphere application server and WebSphere MQ messaging middleware . . . Atalasoft Inc. has updated its **ImgX** imaging components for Visual Basic. Version 6 of the component suite, priced at US$299, adds new features, compatibility with .NET, and an OCX control that provides a user interface for the ImgX dynamic link library . . . Compuware Corp. has updated its **Abend-AID Fault Manager** to work with Solaris. Previously, version 3.0 of the fault-detection software worked only with OS/390 and Windows . . . IBM Corp. has added several new utilities to its alphaWorks developer site, including **Custom Tag Conversion Kit**, which transforms Lotus Notes views and forms to JavaServer Pages; **XML Processing Plus Plus**, a type-checking language that runs on Java; and **Web Services Toolkit** version 3.3, an SDK that works with Tivoli Management Web Services . . . InterSystems Corp. has pledged to release a version of its **Caché** transaction database for Mac OS X. The server software will be out in early 2003, according to the company; it is already available for Linux, Unix and Windows . . . Volume 2 of Macromedia Inc.'s **MX Developer Resource Kit** is available for US$99 from the company's Web site. The kit includes Flash MX components, including a new Flash UI editor, plus Dreamweaver MX extensions . . . SoftIntegration Inc. has released a toolkit that allows its **Ch** C/C++ interpreter to act as a front end to Intel Corp.'s **OpenCV** open-source library for building real-time computer vision applications . . . Express Logic Inc. has provided a version of its **ThreadX** runtime API error checker to Green Hills Software Inc., which has incorporated the debugging feature into its Multi IDE . . . Corel Corp. has unveiled **Smart Graphics Studio**, a toolkit for creating Scalable Vector Graphics (SVG) files for use in Web applications. The studio also includes an SVG server and viewer, and will ship in mid-2003. Plus, Corel updated its **XMetaL** XML editor toolkit; version 4.0 allows XML content to be embedded into ActiveX-compliant Windows applications . . . Pronexus Inc., which manufactures computer telephony software, released **VBVoice 5.0**, an upgrade of its Visual Basic toolkit. The new version now allows developers to build Voice over IP, speech-enabled and other telephony software using Visual Basic .NET and C#, in addition to Visual Basic 6.0 . . . VeriTest, a division of test tools maker LionBridge Technologies Inc., has announced a testing service that gathers usability data about Web sites. The new **LiveTest** program collects clicks, keyboard strokes and other metrics from its community of Web users . . . Avaki Corp. has released Data Grid, a tool for building distributed data applications using J2EE. The tool fed-

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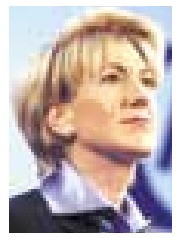
Maturing Java Gives Developers a Respite

Vendors vertically integrate tools, platforms

BY ALAN ZEICHICK

Java is a mature technology. In the eyes of many enterprises, J2SE and J2EE are reasonably well-understood specifications, with well-established brand names. Experienced Java programmers are readily available. And while few businesses are building or deploying applications on the embedded version of Java, J2ME, the technology has gained an early lead in the mobile device market, with deeper and broader penetration than the handheld-centric Windows CE and Palm OS. (For more on J2ME, see "A Big Year for Small Devices," page 18.)

Beyond plugging holes in the specifications, such as to provide a vendor-neutral approach to multistep transaction orchestration, and for publishing and consuming XML-based Web services, there's little pressure on Sun Microsystems Inc.'s Java Community Process (JCP) to make radical changes. Indeed, Java developers may be enjoying the respite; it's hard to master a moving target, or build on a rapidly changing platform.



After buying Compaq, Carly Fiorina killed HP's Netaction platform.

That's not to say that Java and its tools didn't change in 2002. The JCP passed quite a few Java Service Requests (JSRs), including a key update to Java 2 Standard Edition. J2SE 1.4, which entered beta in 2001 and was approved by the JCP in spring 2002, updated the specs to support XML processing, 64-bit Unix and stronger cryptography.

Unfortunately, the JCP was not able to make progress on a full Web services specification within Java 2 Enterprise Edition, the platform version designed for servers. The current release, J2EE 1.3, does not adequately cover Web services, as it does not incorporate key protocols into the base platform. J2EE 1.4, which will fix that, was sent out for review in October 2001, but spent most of 2002 going to revisions, including two "proposed final drafts" in August and November. The specification is widely anticipated to be approved in early 2003.

The JCP also revised its own operating policies to allow open-source implementations of many of its specifications. Urged on by hard-ball negotiations by the Apache Software Foundation, Sun promised to stop charging open-source developers for the test kits required for JCP compatibility certifications, and even ponied up a US$3 million "scholarship" fund to assist organizations (primarily Apache) to build open-source implementations of Java server software.

While the JCP deliberated on Web services, the J2EE platform vendors moved forward with their own implementations based on draft specifications and proprietary ideas and extensions. Most closely watched was Sun's own Java Web Services Toolkit, which appeared in June, but major competitors such as BEA, IBM and Oracle also released Web services extensions to their J2EE 1.3 app servers. Smaller players like Borland, Macromedia and Sybase proved themselves to be just as nimble as the big guys when it came to Web services—perhaps even more so, as they brought their tools and platforms into alignment.

In July, Jonathan Schwartz took over as EVP of Sun's software group.

The real action in the Java world came from the vendors, many of whom spent the year tightening the linkages between their applications servers, databases, portals and tool sets, using branding as well as new protocols to push the vertical integration message. IBM's WebSphere software stack encompasses its IDE (WebSphere Studio Application Developer, formerly VisualAge) and message queuing (WebSphere MQ, formerly MQSeries). Oracle's JDeveloper tools provide a linkage between the 9iDB database and 9iAS app server. Even Sun rebranded, abandoning long-established trade names like Forte and iPlanet in favor of the Sun ONE moniker.

Those replacements for the Forte and VisualAge tools became the foundation of a heated war of words between IBM and Sun, as Armonk promoted its own open-source tools project, Eclipse, as an alternative to Sun's NetBeans. During 2002, both projects attracted their share of followers and supporting vendors, but rather than acting as a unifying tools platform for the Java community, and a broadly supported competitor to Microsoft's Visual Studio .NET, Eclipse and NetBeans are cast as vendor-focused tools for building WebSphere and Sun ONE applications.

Indeed, major vendors began using Java and its related specifications as a lowest-common denominator, as opposed to a basis for their platforms. During the year, the vendors offered up home-grown APIs, frameworks and extensions to the JCP specifications and World Wide Web Consortium standards, ostensibly to "respond to customer demands," but in reality, offering vendors productivity benefits if they would agree to adopt proprietary technology, such as BEA's Java Web Services tagging format (JWS) and IBM's Business Process Execution Language (BPEL). With IBM's releasing yet more proprietary formats in December along with its WebSphere 5.0 application server, this trend is sure to continue.

Two trends we hope won't continue: bad benchmarking and company failures. The high-profile collapse of WebGain led to the acquisition of its products by firms such as Oracle and TogetherSoft. TogetherSoft, in turn, is being acquired

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Who: Matt Sivertson
What: Wheel of Fortune & Jeopardy
Where: This is wireless – there is no "where"
Why: The future always arrives earlier than you'd expect

Matt Sivertson is a developer working for Sony Online Entertainment. He's the brains behind both Wheel of Fortune and Jeopardy – two new BREW™ applications wireless users can download and play whenever they want. Like Sivertson, more and more developers are recognizing the rewards of the BREW solution. "There's a huge untapped market out there," he says. "And BREW has the carrier support to get my technology into the hands of those people." Commercial services are launched and BREW applications are hitting the market. And they're hitting the market now. Games and entertainment, messaging and email, news, weather, sports, stock trades, position location, ringers... you name it. If you aren't developing for BREW, you aren't developing to your potential. To get started, visit www.qualcomm.com/brew/sdt.

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Raining Data Updates mvDesigner GUI Builder

BY EDWARD J. CORREIA

Multivalue database vendor Raining Data Corp. in mid-December released mvDesigner 1.1, the latest version of its 4GL rapid application development environment that now includes a graphical report generator and can deploy database front ends to any of its back-end systems with no changes in client code.

"mvDesigner can now build databases for mvBase, mvEnterprise or D3 without having to make any changes," said Mario Barrenechea, senior vice president of worldwide sales and marketing at Raining Data (www.rainingdata.com). "We've also enhanced the report component so it could tap into back-end databases and call BASIC programs," he added.

Raining Data was known as Pick Systems prior to its acquisition by Omnis Systems last year. And with its Pick database roots, Barrenechea said that a major percentage of Raining Data's customers in health-care, factory distribution, restaurant and other industries with point-of-sale devices are running character-mode applications to access back-end data on Pick systems. "Those applications are still humming out there," but for desktop systems, terminal emulation software is required, he added.

According to Barrenechea, mvDesigner offers a better alternative to building GUI and Web front ends for Pick systems than Visual Basic, Delphi or PowerBuilder. "The difference is that if you want to use any of those tools, you have to go through an ODBC-style layer, which slows you down. We made mvDesigner understand Pick data natively, so components you build understand the structure on the back end. There's no ODBC layer," which he said improves performance and gives Pick developers a path to the future. "They can either rewrite their applications or extend them to client/server environments or the Web."

Raining Data's GUI tool builds on existing Pick systems, says Barrenechea.

Available now, mvDesigner 2.0 for Windows and Linux hosts costs US$2,195 for the first developer and US$995 after that. For client/server applications, client access licenses cost US$165 per concurrent user. The new version also includes a unified installation process that Barrenechea said now encompasses its FlashConnect middleware. ∎

DataDirect Connects .NET With Distributed Transactions

BY EDWARD J. CORREIA

For developers who have been spending time building or modifying connections between Oracle or Sybase applications for Microsoft's ADO.NET, DataDirect Technologies Inc. may offer some help. The company in December released Connect for .NET 1.1, the latest version of its connectivity components that it says now support distributed transactions for Oracle and Sybase databases.

According to Evan McDonnell, vice president of product management and corporate development at DataDirect (www.datadirect-technologies.com), Connect's new capabilities ensure the integrity of transactions that take place over distributed databases. "Lots of corporations have actions that have to take place across multiple databases. If they don't have a way to do distributed transactions, the process could be interrupted and not be properly rolled back," he said, which generally results in corrupt or unreliable data. "By providing for two-phase commit capability, you can avoid that common problem."

An advantage of Connect for .NET for developers not using Microsoft's SQL Server, McDonnell claimed, is its confinement within the .NET Framework. "The data model for .NET [relies on] SQL Server, which doesn't work for a lot of people. So if you want to use the .NET Framework and write a program for Oracle, you're going to need a data provider. The only ones available today use Oracle's client library, [which requires] code that reaches outside the .NET Common Language Runtime, potentially opening you up to hackers," he asserted. The components also now support more Oracle data types, including RowID.

Available now, Connect for .NET costs US$4,000 per server processor plus US$125 per client. ∎

OFFICE 11

◂ continued from page 1

data. There's data in those back-end systems that could be useful to employees, if they could get access to the data in the right format."

The main new development technology, tentatively called "Visual Studio Tools for Office," said Robert Green, lead product manager for Visual Studio, is designed to go a step beyond Visual Basic for Applications, the macro-recording language embedded into Office.

"VBA continues to be an important piece for Office, and it will gain some interesting new functionality in Office 11," such as calling XML-based Web services, said Green, adding, "but developers using Visual Studio .NET 2003 will be able to write code using Visual Basic .NET or C#, and that code will run within Word and Excel."

Green emphasized that these new capabilities will be offered only within Visual Studio .NET 2003, and will not be usable by developers using the original VS.NET release. It also is specific to the Word and Excel applications, and to VB.NET and C# languages, he said. "In future releases, we'll look into adding additional language and additional Office applications."

The new tools are separate applications that run within VS.NET, Green continued, who would not elaborate as to packaging or pricing.

Separately, Microsoft has released the final version of its Web Services Enhancements 1.0 kit for .NET. This toolkit, available from http://msdn.microsoft.com/webservices, adds new functions to the .NET Framework and Visual Studio .NET. Those are the WS-Security, WS-Routing, WS-Attachments and DIME specifications. These functions will be absorbed into the second release of the .NET Framework that will ship along with Windows .NET Server, according to the company, and into Visual Studio .NET 2003. ▮

ENHANCEMENTS

WS-Security, written by IBM, Microsoft and Verisign, uses SAML, the Security Assertion Markup Language, to associate security tokens with SOAP messages. These companies submitted WS-Security to OASIS in June 2002, and Microsoft's code is based on that original version. Since that time, OASIS has released several drafts of a final specification.

WS-Routing is a protocol for sending SOAP messages over specific message paths, which are specified within the SOAP message itself. This is a Microsoft-specific specification, published in October 2001.

WS-Attachments provides for a compound document structure consisting of a SOAP message and zero or more distinct attachments. The code in the Web Services Enhancements kit is based on the original spec developed by IBM and Microsoft; the work has since been turned over to the IETF, and is now an Internet-Draft.

DIME, or **Direct Internet Message Encapsulation**, is a lightweight binary format for SOAP or WS-Attachments payloads. Originally developed by IBM and Microsoft, it too has been turned over to the IETF and is currently an Internet-Draft.

News Briefs

MORE PRODUCTS

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erates data objects from multiple locations and data stores, manages user and group identities across disparate organizations, and automates data caching. The company also is offering a bundle with its **Compute Grid**, a tool that provides access to available processing resources . . . Rainbow Technologies Inc. has updated its USB-based authentication token. **Sentinel SuperPro 6.3** is now certified for Windows XP, and also works with Linux and Macintosh applications. The token also now works with Microsoft's Visual Studio .NET.

STANDARDS

OASIS, a vendor-neutral interoperability forum, has approved version 2.0 of the **ebXML Collaboration Protocol Profile and Agreement** as a standard. The CPPA defines the technical capabilities of partners in a trading network. OASIS also has formed a technical committee for governments to collaborate on XML-related standards, and for developing an open schema for exchanging tax-related information . . . Sun Microsystems Inc.'s Java Community Process has released a final spec for **JSR-109, Implementing Enterprise Web Services**, and a review draft specification for **JSR-110, Java APIs for Web Services Description Language**. Also early drafts of **JSR-199, Java Compiler API**, and **JSR-200, Extending the Java Programming Language with Enumerations, Autoboxing, Enhanced for loops and Static Import**, are available for community review . . . The World Wide Web Consortium has released **XML Encryption Syntax and Processing** and **Decryption Transform for XML Signature** as W3C recommendations. The group also has released a public working draft of **Evaluation and Repair Language 1.0**; EARL provides a vocabulary for describing tests and test results. ▮

If your back-end database isn't a good match for your front-end development, you need a new database. Caché, the post-relational database from InterSystems, is a powerful fusion of today's mainstream technologies: objects and SQL.

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IBM/RATIONAL

◂ continued from page 1

flexible and adaptable to changing platforms and standards.

One possible outcome of the acquisition is that IBM will extend or integrate Rational's tools for optimal performance on IBM's platforms. And while that may be a boon for IBM's large customer base, or those shops already leaning toward WebSphere, it may discourage developers on other platforms from choosing Rational's products or services. After all, it's unlikely that IBM's competitors would be recommending tools from IBM's Rational division.

Eric Schurr, vice president at Rational, said, "Some people may have a knee-jerk reaction that this constrains them, [but] it is about open standards and heterogeneity. We'll have to demonstrate we mean that."

So far, signs are mixed. According to Fred Ball, Borland's vice president of business development, Rational canceled an agreement to bundle its Rose modeling tool with Borland's JBuilder development environment on the Monday before the Friday acquisition announcement. "We wanted to continue bundling the tool, but they canceled the agreement," he said, admitting that he wasn't sure if the cancellation was due to IBM's proposed acquisition or to Borland's October bid for Rational competitors TogetherSoft Corp. and Starbase Corp.

GOOD NEWS FOR BORLAND

Sam Patterson, CEO of component vendor ComponentSource, said, "The winner in all of this, surprisingly, may be Borland. They're in a prime position to take away market share from Rational as many corporations would not necessarily like being tied to IBM for part of their development products. IBM has not not been successful with people who don't want to deal with IBM."

Borland's Ball added that how IBM succeeds depends upon "how they deal with the lock-in issue. Customers want freedom of choice. Now it's a question of who's going to bridge the .NET-Java gap instead of pushing a stack solution." IBM's Mills acknowledged IBM principally writes to Java and C/C++, and that while it must deal with Microsoft interfaces, it does not specifically build to the Microsoft infrastructure.

Rational gained much of its success by offering a platform-neutral product suite, and Richard Soley, president of Object Management Group Inc., which oversees the Unified Modeling Language specification upon which several of Rational's products are based, said, "IBM bought a strong cross-platform tool vendor, but we don't know what its strategy for Rational will be. IBM wants developers in its camp, and there's no question Eclipse [the IBM-led open-source development framework initiative] is cross-platform. You have to understand that a company of IBM's size doesn't have one point of view."

One thing they all agree on, though, is that the acquisition of modeling and life-cycle tools by a company as large and influential as IBM validates the viability of this market segment.

"IBM realizes you need to do more than write code and have an IDE," said Greg Clancy, brand manager for Computer Associates' AllFusion application life-cycle product line. "CA and Rational, and now Borland, are the last key independent life-cycle players. Now that Rational's in the IBM portfolio, people will have to relook at them. .NET customers will have to wonder if Rational is the way to go." ▮

Freshwater Adds Web Services Monitor to SiteScope

BY CHRISTINA M. PURPI

Freshwater Software Inc. has added Web services tests to the latest version of its SiteScope systems and Web monitoring software.

Previous versions of SiteScope monitored the availability and response time of more than 65 network and server elements, such as Web servers, mail servers, databases and firewalls, according to Diane Hagglund, director of marketing and product management at Freshwater (www.freshwater.com), a wholly owned subsidiary of Mercury Interactive Corp.

Russell Frahmann, a senior product manager, explained how the new Web services monitor works: "You enter a URL that will hit a Web service. The monitor retrieves the WSDL, looks at all the methods available for that Web service, while the developer chooses a method which is then called back into the Web service where all the capabilities are displayed. The monitor then fields the data elements that are needed to call the WSDL."

SiteScope 7.6 became generally available in December and costs US$2,995 for every 25 events monitored. ■

JAVA

◂ continued from page 10

by Borland, whose products competed against the WebGain suite. And while Bluestone didn't fail, it might as well have. After being purchased in late 2000 by Hewlett-Packard, the boutique J2EE app-server maker became the centerpiece of HP's Netaction middleware brand. But after HP bought Compaq, the company decided to focus its software efforts on its OpenView systems management tools and OpenCall telecom tools. Goodbye, Netaction. Goodbye, Bluestone.

If only one could say goodbye to the proliferation of pet retailers. Sun has long offered its Java Pet Store application as a reference implementation and demonstration of J2EE. After Oracle used an optimized Java Pet Store to claim that its 9iAS was the fastest app server in town, Microsoft recoded the reference applications in C# as the .NET Pet Shop, and claimed that its version reigned supreme.

Claims and counterclaims flew back and forth, while BEA and Macromedia got into the act with their own versions of the demo app. The silliness culminated in a tainted shootout carried out by The Middleware Company (TMC), a Java training company owned by Precise Software Solutions, a Microsoft business partner. TMC claimed that these tests, paid for and fine-tuned by Microsoft, "proved" that .NET was an order of magnitude faster than two anonymous J2EE application servers. Instantly discredited, TMC vowed to rerun the benchmarks, despite Java Pet Store's unsuitability as a benchmark application. That's one soap opera we'll be watching again next year. ■

WEB SERVICES

◂ continued from page 1

BEA, IBM and Microsoft. That trio also released two additional specs—WS-Coordination and WS-Transaction—that describe how a particular Web service will interact with other Web services.

Add to that WS-Security, WS-Routing, WS-Attachments and Direct Internet Message Encapsulation (DIME), and it's hard for anyone to know who's on first.

Or even who's on second base, because these specs sometimes are launched out of vendor consortia and are then turned over to independent standards organizations like OASIS or the W3C. Or sometimes they're turned over to other vendor consortia: BEA's Java Web Services (JWS) specification for using inline comments to tag Web services data within Java source code is now a part of Sun's Java Community Process.

This year, the Web Services Interoperability Organization was launched with the laudable goal of offering neutral turf for "providing implementation guidance and education to help customers with Web services adoption," in addition to "promoting consistent and reliable interoperability among Web services across platforms, applications and programming languages."

Unfortunately, the creation of the WS-I brought some infighting among industry leaders IBM, Microsoft and Sun, essentially because Sun wasn't invited to the party. Now that Sun is finally a WS-I member, only time will tell if the organization can agree on common specifications and procedures for certifying interoperability.

NEW VENDORS, SOLUTIONS

For platforms, developers can build Web services applications on just about everything from .NET to J2EE to mainframes to handhelds; the platform vendors, as well as independent tools developers such as Borland, have stuck SOAP listeners, XML parsers and WSDL interpreters everywhere. Of course, Web services do not solve all problems; there are numerous challenges in reconciling XML data formats, as well as minor incompatibilities among different SOAP implementations. That has led to a new crop of vendors and solutions, offering Web services management consoles, SOAP testers, XML translators and message routers.

Also up in the air: an understanding of exactly how enterprise developers and architects will use Web services. In Microsoft's .NET vision, which was the first major industry push in this direction, Web services were seen as a loosely coupled way of creating widely distributed applications. It was also touted as a foundation for commercially hosted services, such as its own "HailStorm" identity management system, now known as .NET My Services. Given issues about security within the Web services spec, as well as concerns about turning so much power over to Microsoft, developers largely eschewed those visions, and focused on using Web services for enterprise application integration. While some Web services are generally available over the Internet, the bulk of early implementations are securely inside the firewall.

Meanwhile, Java users were left waiting for a common definition of Web services on the J2EE platform, as J2EE 1.3, released this year, failed to address the issue. This will finally occur in the J2EE 1.4 specification, which won't be out until later this year. ▮

SIZE IS IMPORTANT.

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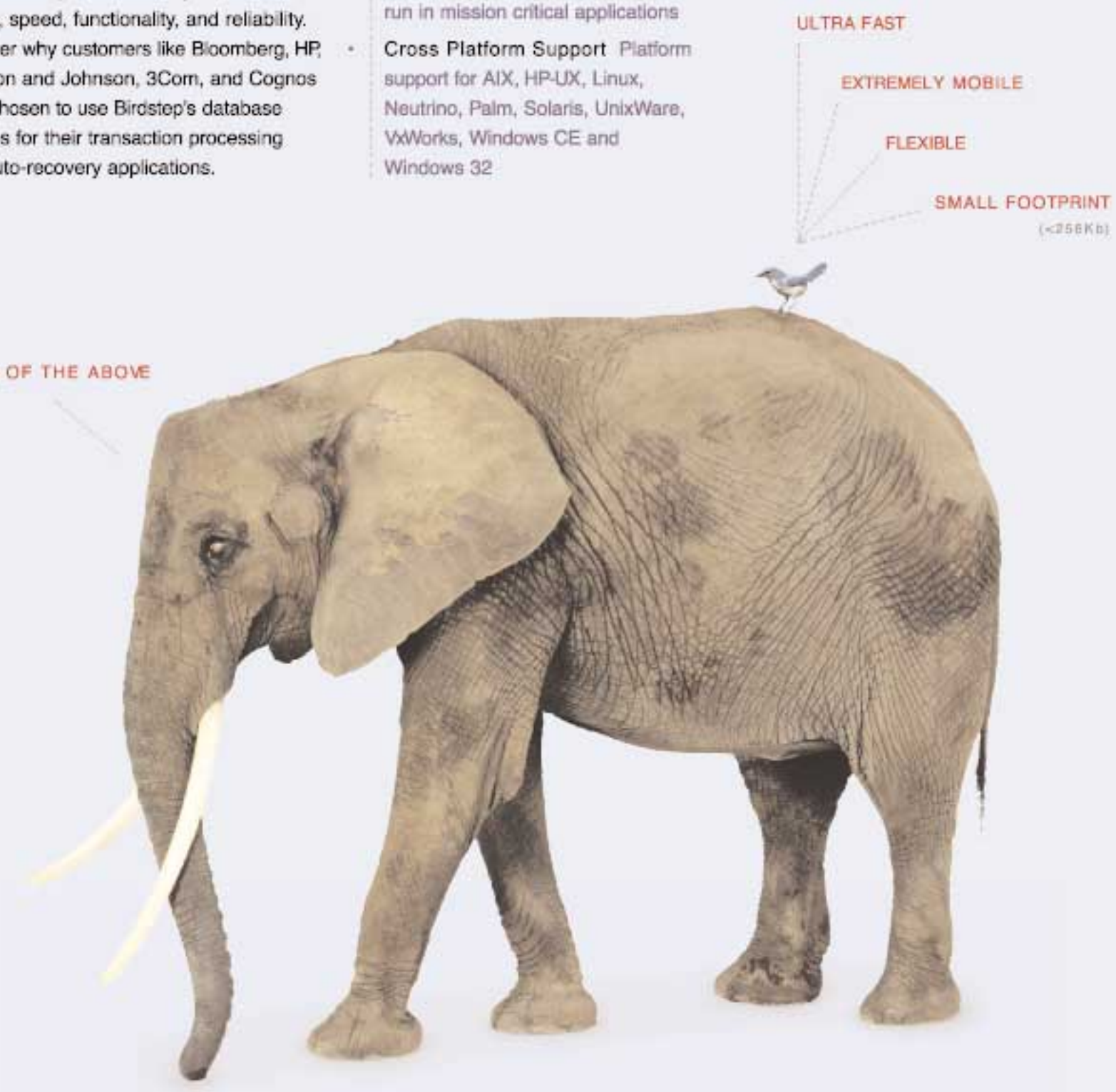

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IR 2002 COMET AWARDS

ELC Releases Linux Platform Specs

Building blocks for embedded Linux devices tap LSB, POSIX

BY EDWARD J. CORREIA

The Embedded Linux Consortium, the multivendor organization focused on standardization, was scheduled on Dec. 30 to release the ELC Platform Specification, the body's first pass at defining a set of building blocks for embedded devices running Linux.

The release would come just one day before the group's self-imposed deadline of Dec. 31, nearly two years after its first proposal, and will not include a compliance suite, as was originally promised. Release of the suite is set for this spring.

According to Mitch Bunnell, CTO of founding member LynuxWorks Inc., the new specification leverages existing best practices, mainly those from the Linux Standard Base (LSB) and POSIX standardized interfaces for Unix. "We wanted to define a set of available APIs that were standard and not proprietary, so [developers] building embedded applications could depend on" a minimal and defined set of services existing in a device running Linux.

Bunnell said the new specs will be most helpful for deciding among the countless options available to Linux developers. "The biggest advantage is that if a developer is building an application for embedded Linux and needs to use a message queue or other function in Linux, which is pretty broad, he can look at this for help deciding on which way to go. These are the [capabilities] available on even the smallest profile."

Standardization can help narrow Linux's choices, says LynuxWorks' Bunnell.

The ELC Platform Spec defines devices using the POSIX 1003.13 profiles 51 through 54, in a way he said that is somewhat analogous to Sun's Java specs. "If you want to write an application for embedded [Java], you would look over Sun's documentation and determine that AWT would be present in small devices but Swing only in bigger ones. So for embedded, you would use AWT interfaces and avoid Swing."

Victor Yodaiken, CEO and co-founder of real-time systems developer FSMLabs Inc., said POSIX profile 51 defines a minimal real-time, single process, multithreaded device, the model most used by his company. "This could be a handheld computer, PDA, controller for a power system, machine tool or lightweight device that doesn't need memory management," he explained. "You can have some I/O, but you don't have the file system." Profile 52 adds a file system; profile 53 adds multiprocess capabilities; and profile 54 adds both a file system and multiprocess functionality, and according to Yodaiken is equivalent to a full-blown Unix system. "Yet developers use the same API when programming for any profile," he said. "That's the big advantage."

Yodaiken, also an ELC board member, said that standardization of embedded Linux will both preserve and expand the market. "I think that standardization will broaden the market. What we've done is to codify the best practices in the Linux Standard Base and apply it to embedded. For developers it should be easier to deal with multiple vendors and versions of embedded Linux because they should all meet the same spec. It will also make it more likely that we don't splinter into multiple feuding groups like Unix did years ago."

VANILLA LINUX?

Yodaiken said he does not believe that a multivendor effort will result in a watered-down spec with no real substance. "I think that it's true that it will be somewhat vanilla, but I don't think that's bad. The POSIX spec is very vanilla, but it's had a very good effect on Unix devel-

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A Big Year for Small Devices

Mobile development platforms shrink as they grow

BY EDWARD J. CORREIA

With the release of smaller, more powerful processors, including the XScale processor from Intel Corp., the next-generation ARM v6 architecture from ARM Ltd. and combination ARM/DSP chips from Texas Instruments Inc. and others, mobile developers have never had more wireless platforms to deploy to.

Microsoft Corp.'s software also has kept pace, with Windows CE having arguably its biggest year ever. The company kicked off 2002 with a January release of Windows CE .NET, which added Passport, SOAP and wireless communications into the operating system, and capped the year in November with the debut of the Compact Framework, the long-awaited runtime extensions that permit Visual Studio .NET developers to extend .NET applications to Windows CE.

In between, the company unveiled Pocket PC SmartPhone Edition 2002 and uncorked SQL Server Windows CE 2.0, which the company calls a faster and more capable version of its database and synchronization engine for building application-specific databases for remote devices without a significant increase in footprint.

There were several advances of interest to embedded Java developers.

In September the Java Community Process approved MIDP 2.0, an update to Java 2 Mobile Edition's Mobile Information Device Profile, which includes advances in graphics, multimedia and messaging for cell phones, handheld PCs and other resource-constrained devices while controlling footprint size. And in August, Sun Microsystems Inc. unveiled the CLDC HotSpot, a configurable virtual machine that the company claims offers significant performance improvements over the previous small-footprint JVM.

Also furthering the deployment of enterprise applications to mobile devices was IBM Corp., which in April released WebSphere Studio Device Developer and WebSphere Micro Environment, a set of development tools and a Java runtime that the company says let developers extend their WebSphere applications to cell phones and handheld computers.

QNX Software Systems Inc. in June launched the rebranding and vertical bundling of its Neutrino RTOS with development tools and services, appearing to kick off a domino effect, with several other RTOS vendors unveiling similar plans last year, the most recent of which was LynuxWorks Inc. in December. Notably, market-share leader Wind River Systems Inc. in November launched a series of vertical bundles and for the first time in its 20-year history began offering subscription pricing to all comers. Other major companies introducing vertical bundles and/or subscription pricing were Green Hills Software Inc. and MontaVista Software Inc.

INDUSTRY CONSOLIDATES

Mentor Graphics Corp. made headlines in April when it acquired Accelerated Technology Inc., and used ATI's Nucleus royalty-free RTOS and codelab application testing tools to augment its embedded systems division. At the time, Mentor said it planned to integrate some of ATI's tools with its own, but has since released only one such combined product.

Mentor also in March acquired IKOS Systems Inc., which makes hardware-assisted design verification tools, broadening its line and the price points of its emulation products.

More recently, development tools maker Metrowerks Inc. in September acquired most of the software testing tools from Applied Microsystems Corp., and will add AMC's NetROM, CodeTEST and TAP hardware and software tools to its own, strengthening its offerings for LynxOS, Nucleus and embedded Linux. The company also plans to enhance the tools to target more architectures. At the same time, Metrowerks further demonstrated its intention to target embedded Linux developers with a major update to its CodeWarrior Development Studio C-language IDE for embedded Linux, and did so again in December when it acquired Embedix Inc. Formerly named Lineo Inc., the financially troubled Linux kernel and tools developer was forced into auction in April and was ultimately purchased and renamed by its shareholders.

Handheld computer maker Palm Inc. split itself in two in March, spinning off operating system development and software operations into PalmSource Inc. The software company in June released Palm OS 5, a 32-bit version of the operating system for ARM processors that was hoped to buoy a platform that has been steadily losing market share to competitors, mainly Microsoft's Windows CE.

EMBED TOGETHER

There were some notable industry alliances in 2002, including the Open Mobile Architecture initiative, which in January was formed by Nokia Inc. and Japan's NTT DoCoMo with the intention of specifying a standard way for software running on cell phones and other mobile computing devices to browse the Web, send and receive messages and execute applications, all with location-awareness capabilities. The organization boasts a long list of participants, and in June merged with the WAP Forum and became the Open Mobile Alliance.

In November the group introduced the OMA Release Program, which includes technical specifications on how to build standardized mobile browsers, perform a DNS lookup, use MMS, manage digital rights, download content and push e-mail notifications.

Another alliance that has borne fruit is the Embedded Linux Consortium, which in December released its first set of specifications for developing embedded devices using Linux. The consortium in April named its first working group, fully a year after changing its charter from marketing and promotions to standards setting. ▮

METROWERKS

◂ continued from page 1

a complete solution."

Baratta said that while Metrowerks (www.metrowerks.com) plans to supply a kernel in some situations, further kernel development is not a priority. "Lineo has just under 25 [board support packages], and some are the best [available]," he claimed, citing the one used in Sharp Electronics' Zaurus handheld computer. But for nonsupported boards and new designs, the company will seek third-party kernels, he said. "Our preference is to use someone else's kernel when it already exists. The Embedix target wizard can import any vendor's kernel and use it. They've made the solutions kernel- and BSP-agnostic." The Embedix kernel was currently at version 2.2.13.

Embedix, known as Lineo Inc. until April 2002 when it was forced into auction by shareholders demanding profitability, created and marketed its SDK along with integrated platforms designed for handheld computers, residential gateways and digital televisions—the last of which Baratta said was of particular interest. "One of the main goals of the acquisition is to make Linux successful in television." Metrowerks had its eye on that prize in January 2002, when it formed Triarc Content Labs, an alliance that also included Lineo and Broadband Communications Sector, a division of Metrowerks parent company Motorola Inc. But now that Motorola owns all three, Baratta said Triarc may no longer be necessary.

With the exception of a few Embedix employees working on software in Japan, Baratta said all of the company's staff and IP will be acquired. Former CEO Matt Harris had already accepted a senior management position with Metrowerks.

"They could have done it without Lineo," said Harris of his new employer's tactic, "but [the acquisition] accelerates their strategy by about 12 months. The value in embedded Linux is not in the kernel but rather in the tools and the complete solution, which they get right out of the box." ▮

ELC SPECS

◂ continued from page 19

opment; most Unixes are more compatible now than they were 10 years ago. So if we can have that kind of success in embedded, which is so much more varied, [any] positive effect will [be] enormous for developers." POSIX, or Portable Operating System Interface for Computing Environments, was first published in 1990 as a way of unifying Unix development.

But if POSIX had already specified standardized devices and APIs, why were the ELC specs necessary? "Because we wanted to take into account some of the things the LSB had done and to use their practices," Yodaiken said. "For example, Linux has two thread models—it's got POSIX threads and a native Linux threads model, which has some advantages, and some programmers prefer it." The ELC spec supports both.

There was one critical component missing from both LSB and POSIX, said LynuxWorks' Bunnell, who also serves as a vice chair on the ELC's platform specification working group. "One thing you don't have is a way to find out what facilities are available [in a device]," he said, a necessity for an app to determine, for instance, if a device has networking and file system support. "So that's the only thing we added as a new interface," he said. The ELC Platform Specification can be downloaded at www.embedded-linux.org. ▮

THEY SAID WHAT?

JAN. 1 "The truth is that IBM is excluding both NetBeans and Sun every step of the way."
Sun's Simon Phipps, discussing IBM's Eclipse open-source development project.


Phipps

FEB. 1 "Perhaps I misunderstood the question." *Byron Sebastian, senior director of product management at BEA, who at first said the company's new proprietary development framework would work only with BEA's application server and later backtracked to say the framework would support J2EE specifications.*

FEB. 1 "Are they airing their dirty laundry or comparing Ebola to leprosy?" *MontaVista's Bill Weinberg, decrying what he called Microsoft's disinformation regarding embedded Linux.*

APRIL 1 "The Intel question has been widely misreported and misrepresented. What we announced was that we are delaying the productization of Solaris 9 on Intel." *Sun's Bill Moffitt, discussing Sun's decision to abandon Intel's architecture in the latest version of Sun's operating system. Solaris 9 on Intel remains delayed.*


Stallman

JUNE 1 "Proprietary software is antisocial and shouldn't exist." *Free Software Foundation founder Richard Stallman on software licensing.*

JUNE 15 "The marketplace made up its mind that [object databases] wouldn't be an alternative." *IDC analyst Carl Olofson discussing object databases that were thought at one time to be a replacement for relational databases.*

JULY 1 "They were on a slow march to obscurity." *Meta Group analyst Craig Roth discussing Novell prior to its acquisition of SilverStream.*

JULY 1 "If we don't have this thing working the way I think it should by Christmas, then I'm the wrong guy for the job and I should be out of there." *Embedix (formerly Lineo) CEO Matt Harris on his plan to take the company to profitability. He beat the deadline by about a month, as Embedix was purchased by embedded tools vendor Metrowerks.*


Harris

SEPT. 1 "That should give Borland a swift kick in the teeth." *Keith Boswell, vice president of marketing at TogetherSoft, when that company purchased the WebGain Studio development environment. Later, Borland bought TogetherSoft.*


Meyer

NOV. 1 "I don't see the 'N' thing happening." *Giga Information Group analyst John Meyer, referring to Novell's branding strategy of using a capital N in the SilverStream product name to indicate it is now Novell property.*

NOV. 15 "We have a history of innovation that IBM fundamentally lacks—innovation happens *to* IBM." *Sun's Jonathan Schwartz, upon announcing that Solaris would be the foundation for the company's software strategy.*

The Year That

BY THE NUMBERS

2 states, Massachusetts and West Virginia, remain standing in the challenge to a U.S. District Court judge's settlement of the Microsoft antitrust case, calling it a "loophole-filled deal" that won't stop Microsoft's "aggressive practices."

10 vendors—BEA, Borland, IBM, Iona, Macromedia, Persistence, Pramati, Oracle, Sun and Sybase—still market a Java application server as a standalone product.

57 companies have had input into the creation of version 2.0 of the Unified Modeling Language, making it the largest project ever undertaken by Object Management Group.

67 Linux distributions are listed as available at www.ibiblio.org /pub/Linux/distributions, a Linux archive Web site.

467.6 million dollars lost by Hewlett-Packard when it decided this year to abandon the HP-AS platform it developed after spending that much to acquire Bluestone Software in late 2000.

PASSING

SAMUEL D. CONTE 85, on July 1. Conte led and helped establish the first computer science degree program in the nation at Purdue University, around 1968. Said Purdue president Martin C. Jischke: "He was one of the first to recognize the role the computer could play in teaching and research, as well as in business."

EDSGER W. DIJKSTRA 72, on Aug. 6. Dijkstra was known as "the father of modern computer programming." Dijkstra was the creator of structured programming. He also invented the shortest-path algorithm and coined numerous terms and concepts widely used today, such as deadly embrace, semaphores and the computer definitions of stack and vector.

BOB WALLACE 53, on Sept. 20. Wallace was one of the first Microsoft employees and an early advocate of the "try before you buy" concept for software distribution. He left Microsoft in 1983 to start his own company, Quicksoft, and launch a word processor, PC-Write, that became one of the most popular shareware applications for DOS.

HANDING THE BATON

COMPANY	IN	OUT
Actional	Frank Bergandi	John Orcutt
Caldera *	Darl McBride	Ransom Love
Computer Associates	Sanjay Kumar	Charles Wang
Crystal Decisions	Jon Judge	Greg Kerfoot
LogicLibrary	Gregory Coticchia	Ellen Milantoni
NeoCore	Eric Miles	Tim Dix
Rational	David Henshall	Timothy A. Brennan
Rogue Wave	John Floisand	Jack Iacobucci
Starbase **	Jim Harrer	William R. Stow III
Sun	Steve McGowan	Michael Lehman
Sun	Jonathan Schwartz	Patricia Sueltz
TeamShare	Jeff Rhodes	Bruce Huebner
TogetherSoft **	Jeffrey Lunsford	John Vrolyk
VA Software	Ali Jenab	Larry Augustin
XAware	Bill Miller	Mike Hill

* Has been renamed The SCO Group

* * Has since been bought by Borland

Was: 2002

Despite an economic slowdown, or perhaps because of it, the year just past saw plenty of acquisitions and corporate shake-ups, plus the slow-motion disappearing act of WebGain

MONEY, MONEY, MONEY, MON-EY!

It started slowly, but finished with a flurry, with Borland and then IBM stepping up late in the year to acquire modeling and other tools that broaden their offerings. HP closed its acquisition of Compaq for an industry-record $18.4 billion after a protracted proxy fight with family representative Walter Hewlett. The $2.1 billion IBM is spending on Rational is about what Armonk paid for the Informix database in 2001.

CLOSED	BOUGHT...	IN...	FOR...
Borland	VMGear	January	$8,000,000
IBM	CrossWorlds	January	$129,000,000
TIBCO	Talarian	April	$115,000,000
HP	Compaq	May	$18,400,000,000
Novell	SilverStream	July	$212,000,000
PENDING			
Progress	Excelon	October	$24,000,000
Quest	Sitraka	October	$51,700,000
Borland	Starbase	October	$24,000,000
Borland	TogetherSoft	October	$185,000,000
IBM	Rational	December	$2,100,000,000
Metrowerks	Embedix	December	Not disclosed

All figures in U.S. dollars

PROMISES, PROMISES

The Embedded Linux Consortium promised to deliver a compliance software suite and its embedded Linux specification by year's end. The specification got in just under the wire, arriving on Dec. 30, but the software suite has been rescheduled for spring 2003.

Microsoft promised to deliver its .NET Compact Framework in June. It was delivered in November.

In April, **ARM** promised to begin shipping processor cores based on its new ARM 6 architecture by year's end. A pair of cores were delivered in November with production-quantity shipments scheduled to begin in December.

Object Management Group promised to deliver the updated UML 2.0 specification in early 2002, although it did not rule out a late 2002 target date. Now, it looks like early 2003.

When four Linux developers in June joined forces to create **UnitedLinux**, they promised to deliver a unified distribution of the open-source operating system before the end of the year. It was shipped in November.

The Web Services Interoperability Organization promised to invite a broad cross section of companies. Sun claims its invitation was lost in the mail. The WS-I sent another one. Sun accepted.

POSITION
President and CEO
President and CEO
Chairman
President and CEO
CEO
President and CEO
CFO and VP
CEO
President and CEO
CFO
EVP, Sun Software
CEO
President and CEO
CEO
CEO and Chairman

ALL TOGETHERSOFT

John R. "Beau" Vrolyk takes the helm on an interim basis.

February 7

After a tender offer for TogetherSoft, Borland CEO **Dale Fuller** looms as the next leader of the modeling company.

2002

September 9

October 30

Founder and modeling visionary **Peter Coad** decides to relinquish CEO role to become chief strategy officer.

Jeffrey W. Lunsford replaces Vrolyk as the company posts record revenues for its third quarter.

RECYCLED

Photo not courtesy of WebGain Inc.

EDITORIAL

Looking Forward, Looking Back

For many in the IT profession, whether developer, IT manager or vendor, the phrase that best describes 2002 might be "good riddance." Last year was a difficult one, with a troubled economy, unfinished war on terrorism, uncertainty over Iraq, and a rash of corporate accounting scandals. With enterprise budgets pinched, nearly every sector felt pain. Fortunately, software development was one of the least-affected tech sectors, and fared well compared with areas such as telecommunications, networking, consumer electronics and semiconductors.

In 2003, corporate America and global commerce will still face many of the same uncertainties that dogged the markets over the previous 12 months. However, there is a growing belief that the worst is over, and that recovery from the most severe downturn since the Great Depression of the 1930s is at hand.

When IT budgets recover, managers will have no shortage of projects to initiate, accelerate or complete. What's interesting is that in 2003, their hard-earned dollars, euros, pounds and yen will go further. In part, that's because developers' salaries, which became highly inflated during the dot-com bubble, have fallen. Plus, big vendors are more willing to negotiate on price than during the previous few years. And while few enterprises will be buying strategic equipment on eBay, there's no doubt that Linux and open-source software are increasingly trusted by IT managers, and can save on up-front spending.

Another change will be in the nature of new IT projects. During the late 1990s and even 2000 and 2001, companies were spending millions of dollars on gearing up for new business opportunities by developing e-commerce systems and moving to an *n*-tiered architecture. That meant adding new servers, databases, app servers and more, as well as finding the expertise to design and build applications for them.

This year, many enterprises will be trying to get more value out of the systems that they already own, primarily through integration. Traditionally, such projects—both in-house EAI and external EDI—were expensive and time-consuming, requiring a small army of consultants and very expensive integration platforms. Many integration projects also failed because they were too costly, too brittle or took far too much time.

That will change. With emerging technologies and standards, such as Web services, it's conceivable that integration costs could end up dropping by an order of magnitude. Not only that, but once silos are enabled to communicate using Web services, future applications should be even easier to build. While integration isn't as sexy as setting up an e-commerce site, IT will find such projects to be a compelling and cost-effective way to make their enterprises more efficient.

Over this next year, we're likely to see an economy that's still tentative, and perhaps even sluggish, and with corporate bosses concerned more with delivering profits than making long-term technology investments. That's a healthy sign, as vendors and IT staff remember that their mission is to improve the efficiency of an enterprise, not reinvent it. ▮

GUEST VIEW

GETTING THE COPYRIGHT RIGHT

BY KAREN SCHNEIDER

Web developers, and their managers, typically don't think about the ownership of the content going onto their intranet or Internet sites. But as the last line of defense against copyright violations—and perhaps the only line of defense—you should try to ensure that your company has permission to use the content that you're incorporating into Web applications.

I'm a librarian and a technology writer—not a programmer. But I started my library career as a children's librarian, which means I need to begin with a story.

This June, after seven years as "The Internet Librarian" for the trade journal American Libraries, I wrote my last monthly column. It was a wonderful experience, but I wanted to move on to other writing projects while the column was still fun enough to miss. A couple of weeks later, I was browsing a Web portal looking for information about the USA PATRIOT Act, when I stumbled across an American Libraries article I had published just months before. Surprised, I began searching against my own name in the site's database, and realized that they were selling most, if not all, of my dozens of Internet Librarian articles for $2.95 a pop.

To make a long story short, this Web site didn't have permission to post my copyrighted material—whether or not they charged doesn't affect that reality. Still, to be priced less than a bargain matinee really stung. I now understand why book authors avoid remainder tables.

But why worry? It's the Internet, after all, where information wants to be free—or at least it wants to be $2.95. That's the attitude my students bring to the graduate-level courses I teach; by the time they finish, whether or not they agree with me, they have learned basic guidelines for copyright, whether for the Web or elsewhere.

Millions of words and thousands of legal decisions boil down to this simple rule (common also to children's librarianship and early-childhood parenting): *Please and thank you are the magic words.*

That's copyright in a nutshell: You have to ask ahead of time, and you need to acknowledge that you used copyrighted works.

Copyright is inherent to all creative works, from Web pages to software to 800-word articles

GUEST VIEW

MANAGING WEB AND SOFTWARE CONTENT

It's safe to say that most organizations today already recognize that their Web initiatives, be they intranet, extranet or Internet, serve as a principal interface for delivering vital information to customers, partners, employees and investors. And as technology continues to mature, the Web is increasingly becoming an integral part of critical business processes, with companies moving more back- and front-office applications online.

This shift in business strategy, which is driving the evolution of corporate Web sites from "brochure-ware" to more dynamic, application-centric environments, is making it increasingly difficult to separate Web content from what has traditionally fallen under the umbrella of software development. In other words, "code" and "content," which in the past have been seen as entirely separate entities, have started to collide—on a daily basis.

Yet in most organizations, two very diverse groups of people are tasked with developing and maintaining these entities: software development managers, software architects, application designers, etc., on one side; and business users such as Web designers, content contributors, information brokers, etc., on the other. Given the ever-increasing demand for feature-rich sites and the pressure to speed "time-to-Web," it is essential for companies to take a proactive stance on ensuring overall site quality, reliability and accuracy. Organizations now have no choice but to ensure that the activities of these two very different groups be linked and managed as part of one overall Web development life-cycle process.

STEPHEN KING

Businesses have historically used software configuration management (SCM) tools to manage application development, and Web content management (WCM) solutions to manage Web content. Indeed, WCM solutions, which enable businesses to rapidly design, create, deploy and manage Web site content, have proven extremely useful in alleviating some of the bottlenecks imposed by having a centralized resource (such as a Web developer) in charge of all Web content creation and deployment, and increasing time-to-Web competitive advantages. WCM solutions have also helped mitigate financial and legal risks by greatly reducing instances of incorrectly published content (the incident with the airline that erroneously featured $50 tickets to Europe a while back comes to mind).

However, as Web sites become more complex, and as software developers play an increasingly critical role in creating and maintaining applications that are exposed via the Web, companies are faced with a growing dilemma: how to effectively manage the activities of these two groups—business users and application developers—when they have such widely differing skill sets and are often scattered throughout the organization.

To date, these groups have grown accustomed to relying on a wide assortment of tools and one-off processes to coordinate various activities and complete assigned tasks. As a result, they have had little visibility into each other's work, let alone the overall Web development life cycle. To truly enable faster time-to-Web, without compromising quality, reliability or security, companies must ensure that the activities of these two groups are part of one tightly linked process.

This is no small challenge. It is easy to alienate one of the groups or, even worse, limit their creative freedom by insisting

about librarianship. This means that in most cases, as soon as you write it, you own it, whether or not the copyright is registered with the U.S. Copyright Office. Of course, registering the copyright makes it easier to take legal action if someone steals your content.

A creative work is copyrighted whether or not it displays a copyright notice. Like every child, it's someone's baby, whether or not its name is in the official ledger.

If you sell your content, the buyer or publisher may own it at that point, depending on the copyright agreement. If you write it at work, unless you have a special agreement, your company owns it. (Oliver North found this out the hard way.)

The fact that the content is in digital format or is on the Internet is immaterial. It doesn't matter how easy it is to lift material from Web sites; copyright still applies in the electronic environment, as the "Copyright Basics" document from the U.S. Copyright Office makes clear (see www.loc.gov/copyright/circs/circ1.html). It also doesn't matter if that material in some way involves your company, such as a newspaper story about your CEO, or a technical article about one of your products in a trade magazine. If your company or client didn't write the story, they don't have rights to it. (And even if they did write it, they might have surrendered the copyright.)

Common sense is often your best guide in identifying copyright violations—whether it's in a site that you're browsing, or in a Web content application that you're building for a customer or line-of-business department.

Sometimes site authors will provide official-sounding language "explaining" that they are using copyrighted material in accordance with fair-use guidelines. For example, there are sites publishing most or all of the lyrics for major musicians where the authors claim that they are providing an "educational" service.

Sorry, folks: That generally won't fly, and you generally can't get away with reprinting copyrighted material simply by including such a disclaimer. In reality, the educational-use guidelines for fair use are very narrow, and in no way provide for wholesale unauthorized publishing of content on the Web. If it extends far beyond the reach of illustrating the author's main point, it's really just theft.

A particularly egregious form of copyright abuse is the outright theft of entire sites. A good clue that you are looking at a "cheap copy" of a valuable site is that it is content you are familiar with, but it is missing key features or is not updated.

What should you do? If your customers or line-of-business managers request that you incorporate copyrighted material into your projects, ensure that they have permission to do so—and make sure that you're including the appropriate language requested by the copyright holder (often a variation on "The information is copyright © 2002 by WhoKnowsWho Inc., and is reprinted with permission"). If you are asked to copy entire Web pages published elsewhere onto your site, find out if permission was obtained. Chances are, it hasn't been.

If you want to keep your company or client out of hot water, ask to see some documentation where that permission is granted. If you can't see the documentation, perhaps suggest that a link, rather than a copy-and-paste, is the right way to reference someone else's material. See? Isn't that easy? ■

Karen G. Schneider is the director of lii.org, the Librarians' Index to the Internet, and is a frequent contributor to library and technology publications.

that they use tools, technologies or processes with which they are not comfortable or skilled to use. But what's the alternative?

In the future, a vendor may be able to provide a solution that addresses the needs—and different cultures—of application developers and business users within one product. Until that time, however, businesses must recognize that the two groups are very different, and have very different needs from their development and management tools. Thus, a wise approach would be to choose SCM and WCM solutions that can be tightly integrated in order to effectively "bridge the divide" between these two disparate user groups.

Ideally, even separate SCM and WCM tools should work together to create a "closed loop" process—a process that links the development, Web management and deployment tasks in a way that enhances productivity, quality and control. This allows SCM systems to "hand off" team deliverables, such as releases, updates, patches and other assets, to a WCM system that tracks, manages and deploys the applications and Web content.

Obviously, the two groups must still go through separate processes or production life cycles to complete their respective tasks. Software development projects, for example, will still encompass analysis, design, coding, testing, defect correction, etc. Similarly, Web teams will still handle business analysis, site design, Web presentation design, content creation, content updates and so forth. However, these processes must be linked when code and content are deployed together on a Web site.

The benefits of such an approach are many, in terms of time-to-Web advantages, cost reductions and risk mitigation. SCM and WCM solutions that work together result in improved quality and workflow—reducing bottlenecks and the cost of unnecessary rework. They also allow an increased number of content owners to contribute content directly, since embedded workflow and approval processes prevent publication of erroneous content.

The fusion of code and content, and the increasing need to jointly manage the efforts of application developers and business users, present companies with a unique challenge. To remain competitive, organizations must re-evaluate their current practices and embrace software development and Web content development as processes that are inherently linked, and choose tools that help integrate these processes together. ■

Stephen King is senior vice president and general manager of Merant, which sells the PVCS configuration-management software.

LETTERS TO THE EDITOR

BLAME TO GO AROUND

In response to David Rubinstein's column "Coding On the Defensive" [Dec. 1, 2002, page 30, or at www.sdtimes.com/cols/industrywatch_067.htm] I believe that in addition to Mr. Chou's assertion—that the ease of developing with IDEs lowers the level of skill required to build software and hence lowers the quality of applications—the skill weakness in corporate software development staff is as much the fault of corporate HR and corporate IT project management as it is the fault of the developer. I've interviewed with many corporate IT shops over the years and not once was I asked how to trap a "divide by zero" error.

Why hold project management responsible? Corporate IT has given less and less credence to the software engineering plan required for quality software applications. When software projects come in late, and over budget, it becomes increasingly difficult to convince upper management to develop software a particular way. So project managers are under the crunch to "just get it done." Corporate software development projects, as a result, have high defect rates and high support costs.

Let's face it, when a developer writes one line of code, in effect, a moving part is being created. That's engineering. Why not treat it as such? Project management should support the effort needed within the software engineering plan, but mostly doesn't. Why should software engineering work any differently at XYZ Software Inc. versus XYZ Retail Inc.? The software engineering plan should be a huge part of any software development project plan.

I believe this issue dovetails into the MDA movement. Increasingly, developers will (and should) be asked to model the business domain, not code it. The MDA will handle generating the best practices code, the defensive code, for the targeted platform, for the targeted technology. In the MDA world, being an average corporate developer will not put software development projects in as much risk as being an average corporate developer does today. Only when MDA (not open-source frameworks) becomes the de facto development standard will I be comfortable in removing corporate HR and project management from sharing the blame.

Cem Fuller
Software Developer

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THERE'S MORE TO LIFE THAN SQL SERVER 2000

Developers face nasty choices every day, especially when it comes to back-end databases. There are dozens of options in this area, even if you're a Microsoft-only player. In fact, until recently, Microsoft developers had only two choices when it came to back-end database services: The low-end Jet engine with few features and not much scalability, or going full bore with SQL Server and all its back-end requirements and licensing issues. The chasm is open.

But, the choices for crossing this canyon have recently increased by one. That hole has been filled by Microsoft Data Engine 2000 (MSDE), a SQL Server-compliant database engine that ships with Visual Studio and some versions of Small Business Server. Where does MSDE fit in between Jet and SQL Server?

To answer that, you've first got to take a close look at Jet and SQL Server. Jet, presently in version 4.0, has a huge user base because it's the default engine for Access and has shipped with Visual Studio 6.0. Microsoft describes Jet as a file-based data management system, meaning that databases are contained in just one database file and all reading and writing is done by the client node. Jet's front end is one of its real strengths, given the ease of use offered by Microsoft Access and the GUI-oriented flexibility of Visual Studio. Its weakness lies in scalability, with there being a notorious limit of roughly 7 to 10 concurrent users—a problem that Microsoft claims to have solved, but which still seems to exist.

WINDOWS & .NET WATCH

OLIVER RIST

SQL Server, on the other hand, scales like Spiderman after slurping a venti cappuccino. This scalability comes from its being an old-school client/server database engine, managing all read-write operations on the database side rather than the client side. SQL Server 2000 has built on previous generations of this database system by offering managed scalability, better performance, tighter integration with other BackOffice servers as well as .NET, a nice little Windows CE implementation and a few dozen critical security flaws.

MSDE sits somewhere in the middle. While MSDE is compatible with SQL Server, it also is usable by Visual Studio developers as well as those who wish to use the Access front end. It scales better than Jet, as it's based on a client/server model and runs as a service rather than a stand-alone application. On the downside, MSDE has no native front end of its own—use either Access, SQL Server or Visual Studio to build one.

One nice thing, however, is that not only is MSDE essentially free, but in some cases, you can redistribute MSDE with your applications without the headache of royalties. The matrix of redistribution rights is complex, and terms vary depending on which development tools you have licensed; see www.microsoft.com/sql/techinfo/development/2000/MSDE2000.asp.

I love MSDE as an alternative to Jet. For most small or medium-sized development jobs, you've got all the benefits of SQL Server with none of the cost problems. With MSDE you can scale to multiple servers should you desire, support terabyte levels of data, and take advantage of advanced database management features, including transaction logging, point-in-time recovery, fault tolerance and security measures that are integrated with Windows 2000 Server.

Okay, I'll admit that if my data requirements approach anything relating to a terabyte, I'll be the first one to jump ship to a more robust engine, but I'll stick with MSDE right up to 2GB per database and probably a good deal beyond. The fact that it needs to run as a service is an installation and management issue that's really just a change of perspective rather than a problem.

If you use Jet at all anymore, it should be relegated solely to end-user desktop applications built using Microsoft's Office. This allows users to create work-oriented databases via standard Access and then get around scalability problems by converting to an MSDE back end should the database become popular enough later in life—something made especially simple via an "upsizing wizard" that Microsoft developed expressly for this purpose. And while it's easy to pick on SQL Server's—and by extension MSDE's—security capabilities just at the moment, these will certainly grow more reliable as Microsoft continues to improve in this direction. You can't expect Jet to follow fully in those footsteps.

MSDE is one of those things Microsoft did right. It provides an excellent midlevel platform for easy development today with a clear migration path to a more robust environment should requirements dictate such a move in the future. Chasm closed. ▮

Oliver Rist is a freelance technology journalist and president of FB2 Corp., a New York-based software manufacturer.

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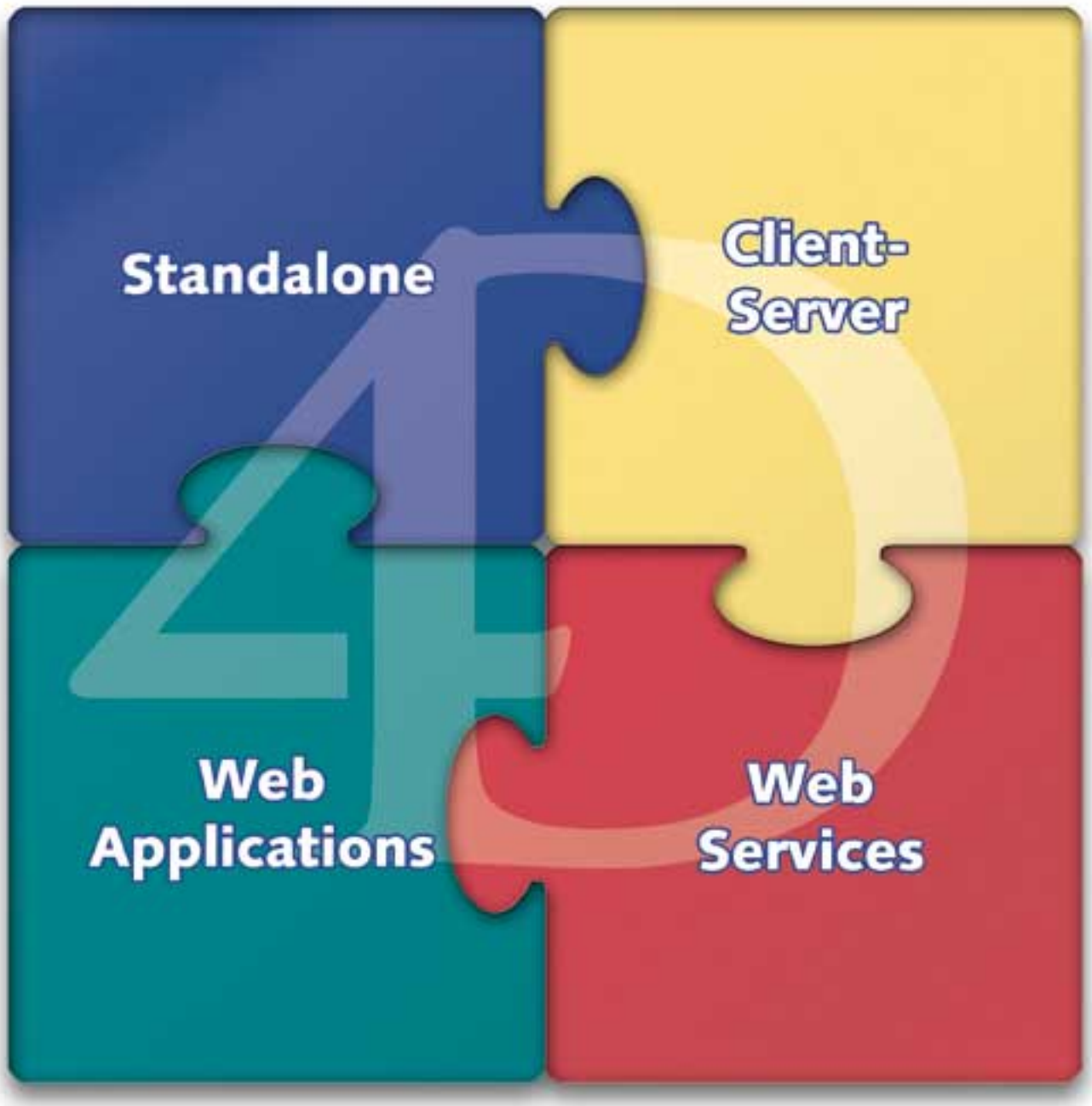

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GETTING A HANDLE ON J2EE 1.3

BEA isn't going to let you forget that IBM was late to the J2EE 1.3 party; when Armonk announced WebSphere 5.0 in December, BEA was telling all and sundry that IBM's software remains two years behind BEA WebLogic 7.0.

While that's more marketing hype than programming reality, there's no question that BEA was the first major Java vendor to deliver a J2EE 1.3-compliant server. WebLogic 7.0 appeared last summer, and was followed shortly thereafter by Sun ONE Application Server 7. IBM trailed along behind. Still, delays and all, IBM finished it up before year's end.

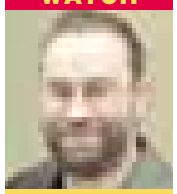
So: The J2EE application servers are here. The J2EE 1.3-compliant IDEs are here. The real question is, "Are you and your team here with the new specification?"

J2EE 1.3 has a lot going for it. You get Enterprise JavaBeans (EJB) 2.0, Java Message Service (JMS), a Java API for XML Processing (JAXP), parser with Simple API for XML (SAX) support and the Document Object Model (DOM), better JavaServer Pages (JSP) and more.

To my way of thinking, the best news in J2EE 1.3 has been the introduction of the message-driven bean, which has made asynchronous messaging much easier. Combine this with the Java Transaction API (JTA) and Java Transaction Service (JTS), and building J2EE applications that needed interapplication communications suddenly becomes a lot easier on the old gray cells.

Almost as spiffy was the arrival of Internet Inter-ORB Protocol (IIOP) to J2EE. With it, you can enable an EJB in one vendor's application server to talk to another EJB on another application server. Since moving applications from one J2EE server, EJB or not, is still a major pain, I can easily see some of your customers running legacy J2EE servers in one department while using a more modern one from a different vendor in another. With the proper use of IIOP, you won't be forced to resort to such tried-and-true kludges as physically moving data from one DBMS to another in a perpetually forlorn attempt to keep the company's DBMSes in some kind of synchronization.

JAVA WATCH



STEVEN J. VAUGHAN-NICHOLS

While IIOP isn't as cool as the Web services protocols, it's a lot more battle-tested.

Unfortunately, what I hear from many developers is that they want, if not the whole messy XML Web services family, at least a standard way to build and deploy Web services in J2EE 1.3. Unfortunately, J2EE 1.3 doesn't provide that as part of the specification.

Instead, what we see are the J2EE platform vendors using a variety of attempts to deliver Web services' Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI), Web Services Description Language (WSDL) and so on atop their J2EE application servers.

Well, we know where this gets us, don't we? It gets us additional compatibility problems. SD Times has reported on this danger before in a different context ("Has J2EE Hit a Fork in the Road? Jan.1, 2002, page 1, or at www.sdtimes.com /news/045/story1.htm). Here, it's not that J2EE might fork. Instead, we face the strong possibility that you won't be able to transfer your Web services middleware programs from one J2EE application server to another.

Sure, the Web Services Interoperability Organization (WS-I) is attempting to bring some rhyme, reason and vendor neutrality to Web standards. Heck, now that Sun is on board, maybe that vendor consortium will actually get somewhere.

But, while Web services interoperability is an important issue, the issue I'm worried about today with J2EE 1.3 is how each of the vendors is implementing its underlying standards. For example, in WebSphere 5.0, Web services features include the Apache Group's recently released Axis 1.0 SOAP parser, which doesn't fully support SOAP 1.1. BEA, on the other hand, with its own parser, claims to fully support SOAP 1.1.

Or, take IBM's new Web Services Invocation Framework, which enables its developers to deploy Web services over CORBA, IIOP and JMS—all of which BEA does as well—and MQSeries (aka WebSphere MQ), which WebLogic doesn't support. Of course, if you were determined to use IBM's MQSeries and BEA, you could deploy BEA's eLink Adapter for MQSeries.

To get back to my main point, should you be using J2EE 1.3's features even though the glitzy Web services features are being determined by the vendors and not the Java community? Yes, you should. If you're like me, and your people spend a lot of their time getting application components and applications to work together, J2EE 1.3 has a lot to offer. And personally, I see much to like with both BEA's and IBM's new J2EE servers.

But at the same time, I also have to say that I really, really wish J2EE 1.4, which is now in beta, would hurry up and get here. Until Web services are officially wedded to Java in J2EE 1.4, upper-level compatibility and interoperability problems between application servers are going to continue to be a headache. And I don't know about you, but I'm sick and tired of taking aspirin when thinking about Web services middleware and J2EE. ▮

Steven J. Vaughan-Nichols is editor of Practical Technology (www.practical-tech.com) and has worked as a programmer for NASA and the Dept. of Defense.

IBM CONTINUES DISTURBING TRENDS

In November, IBM announced the release of version 5.0 of its WebSphere application server. This release is an incremental refinement of previous versions of the product. In short strokes, WebSphere now has tighter integration with WebSphere Studio (the development product formerly known as VisualAge), comprehensive implementation of J2EE 1.3, and support for several specifications, such as Flow Definition Markup Language (FDML) and its superset Business Process Execution Language for Web Services (BPEL4WS), proposed by IBM-led consortia.

In every respect, these new features reflect similar developments in comparable products released by IBM's two primary competitors in the application server market: BEA and Oracle. (I could equally include Sun ONE in this discussion, not only because it's the No. 4 player in this market, but because most of what is happening in the larger market is reflected to some degree in the Sun product line. However, Sun's protracted ambiguity regarding the direction of Sun ONE makes forward-looking discussions of Sun's strategy imprudent.)

For example, all three market leaders are beginning to use development tools as their entry into the enterprise. BEA's WebLogic Workshop, an easy-to-use Web services development environment, was the first in the recent crop. Then came Oracle's incremental upgrade (v. 9.03) to its Java IDE, JDeveloper. Now comes IBM's WebSphere Studio Application Developer (WSAD).

The new WSAD is a souped-up and extended IDE based on the Eclipse codebase developed by Eclipse.org, an IBM-led open-source project. It uses numerous wizards to generate code and resource files, and it can test the generated code on an embedded application server. In other words, its functionality is akin to Oracle's JDeveloper. However, it adds Web services functionality, implemented primarily through wizards, as well as Web interface-design tools, such as layout, HTML generators, image manipulators and the like. It is an impressively complete environment and considerably more powerful than what VisualAge users of the past were used to. WSAD is also the most compelling feature for upgrading to WebSphere 5.0—a perspective with which several analysts, such as Meta Group's Thomas Murphy, agree, alas.

Why alas? Because this emphasis on a platform's tightly integrated development tools reflects the new view held by vendors of application servers that competition on server features and functions no longer justifies the required product investment. As a result, the big three vendors will focus on the secondary tools, which at present means the development tools. Future revisions of the products, at least those from IBM and Oracle, will undoubtedly extend the tools integration to the companies' specific database products. Indeed, the ties already exist in the products, at least in an exclusionary way. JDeveloper does not support DB2, and WebSphere does not support Oracle9iDB.

MIDDLEWARE WATCH

ANDREW BINSTOCK

Not so long ago, IBM was intent on differentiating WebSphere by introducing new software that really did some heavy lifting. For example, it offered portal software, voice-enabled applications, that relied on a foundation of WebSphere. Today, however, the various competitive application servers look increasingly alike. BEA and IBM are the two very similar enterprise-class implementations of J2EE. Oracle and Sun ONE are the twins occupying the midtier. And Macromedia's JRun as well as a coterie of open-source products take care of the other sites. Of these, only JRun actively distinguishes itself on the basis of implementation quality. Everyone else is selling yet-another J2EE server with a tightly integrated tool set.

This evolution puts a finger directly on a fundamental flaw in our collective mindset. That flaw is best articulated by the common phrase: "agree on standards, compete on implementations." Actually, what happens is that once the standards are agreed on, the competition on implementation—if intense enough—eventually dies out because standards can no longer keep up. The implementations can no longer advance in the competitive market without recourse to new, generally proprietary specifications or to unrelated products.

So, as IBM and Oracle use databases and development tools to push their app-server sales, I expect that the server platform as well as J2EE itself will become increasingly irrelevant. In this game, IBM has the upper hand, because IBM has several other product lines that can feed WebSphere sales: notably, Lotus Notes and MQseries middleware. If you own either of these packages (or DB2), aren't you more likely to choose WebSphere for your application server and WebSphere Studio for your development tool? Yup and yup.

By the same logic, BEA has a problem if this trend continues gaining traction. With no other software product lines to drive sales, the company is at risk. Perhaps it will find salvation in focusing anew on the app server. ▮

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

DRIVING TOWARD BETTER SOFTWARE

Business process modeling, advocates tell us, provides companies with a greater return on their IT investments, makes them more responsive to changes within their markets and to their underlying infrastructures, makes developers work more efficiently, and results in software projects that are less prone to error and are more able to be reused.

So, wondered Aberdeen Group Inc. research director Tim Sloane, what will be the impetus to come along to make the software development industry aware of its dysfunctional nature and drive it toward the use of model-driven architectures? How long can IT organizations continue to accept high project failure rates and software that does not completely solve a company's business problems because software engineers and business executives don't speak the same language?

INDUSTRY WATCH

DAVID RUBINSTEIN

In a one-on-one interview at Object Management Group's Integrate 2002 conference, Sloane painted a dire picture for businesses that don't move toward a model-driven architecture. "If you don't do this, you'll die," he stated flatly. "The whole organization has to pull processes out of hard coding to a place they're technologically independent. It'll shift the whole industry."

As an example, Sloane cited the U.S. automotive industry, which was on the ropes in the late 1970s and early '80s as Japanese and European automakers were able to use newer technologies and processes to produce less expensive, higher-quality cars and push the American industry to the brink.

The auto industry, much like the software industry today, was resistant to change. Union leaders believed the new processes would lead to mechanization, which would cut into jobs in the industry. And while there are far fewer people working in the U.S. auto industry, it remains alive and robust and has reclaimed much of the market share lost during those lean times.

Sloane admitted this could be the case in the software industry as well. "It takes a heck of a lot fewer modelers to generate code than it takes engineers to code it," he said, adding that the move to model-generated code is job threatening only if looked at on the face of it. "People said videotapes would blow away the movie industry," he said. "But it just didn't happen. Look at it…revenues for ticket sales at theaters are hitting new highs every year.

"When processes are embedded in systems," he continued, "you've got a hard challenge to make an organization give up what they know is right to go with what works. When a company is starting a new business unit, and it's different than everything else the company has, the company has to rationalize it across customer service, support, what have you, as the cost of getting the product to market."

The Model Driven Architecture as defined by OMG, Sloane said, solves these IT problems in two important ways. The first is that by using models as the mechanism to generate software that's platform-independent, business people have the same language as IT people. This is the first step toward closing the gap that currently exists between the two camps. Now, business managers can give IT the information it needs, in a language it can understand, to make sure the requirements for the development project are rock-solid.

"This happens mostly in companies with physical products that have a tendency not to think of the support group, or the maintenance contracts, while they're creating the products. They have no way to determine if adding $10,000 to the cost of production saves much more than that on the maintenance and support side," Sloane said.

The second big area where MDA benefits organizations, he continued, is in the area of application integration. Every time a software engineer links to data in a stovepipe, it creates a house of cards; therefore, "you don't change anything else. You can't shake the table" or the cards will fall.

Without models that are independent of the underlying technology, businesses can't understand the impact of reuse of data and how these data blocks and applications relate in new processes that are created. "This is going to hurt so bad at some point," Sloane said. "Software developers are reusing data that the data people don't even know is being used. They change the data, but that change isn't reflected in new apps with new business logic."

According to Aberdeen's data, less than 5 percent of all software development organizations create meaningful statistics about their methodologies and processes. It's not being measured. To Sloane, this is outrageous.

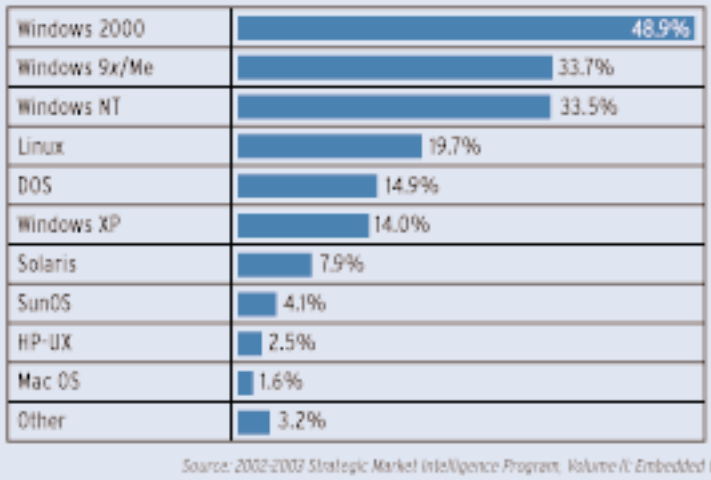
"It's unbelievable," he said, "that CIOs and CFOs don't go, 'Say *what*?' If MDA and modeling are to succeed, the CXOs must start to care about the business efficiency in an IT organization."

Who knows, perhaps the push will come from overseas development, where there is a greater use of methods, metrics and processes in development. Remember, after all, how the threat of superior Japanese manufacturing drove Chrysler to built the K car, and revolutionize the U.S. auto industry. ▮

David Rubinstein is executive editor of SD Times.

Host Development Platform Currently Used In Embedded Development Efforts

DATA WATCH



Source: 2002-2003 Strategic Market Intelligence Program, Volume IV: Embedded Operating Systems and Software Development Tools, Venture Development Corp.
www.vdc-corp.com

If you guessed that most embedded developers use Windows as their host platform, you'd be right. Most embedded developers told Venture Development Corp. that they use Windows, with nearly half using Windows 2000, compared with just under 20 percent for Linux, 15 percent for DOS, and 8 percent for Solaris.

So, while developers increasingly flock to embedded Linux and major commercial operating systems from such companies as Wind River Systems Inc. and Green Hills Software Inc., the embedded developer's desktop belongs to Microsoft Corp.

BUSINESS BRIEFS

Object database vendor **Versant Corp.** has acquired real-time data collection and analysis systems vendor **Mokume Software Inc.** to extend its offering into the real-time computing market, or what is being called business application monitoring. Mokume has focused on the manufacturing sector, providing analysis solutions for real-time data being fed from physical devices such as medical equipment, network routes and oil and gas pipelines, the company said. Versant will exchange 2.4 million shares of common stock for the company, which comes out to roughly US$1.26 million based on Versant's closing price on Nov. 19, 2002, the day before the acquisition was announced. The purchase will help Versant accelerate its plan to deliver real-time solutions based on the company's object database and enJin Java object storage products. Versant is setting up a new business unit to market the real-time solutions. Mokume president Ajay Jain will become president of the new business unit. Versant also reported fiscal year 2002 revenues at US$20 million, down from US$29 million a year prior. Net loss for the year, which ended Oct. 31, was US$3.4 million, or 28 cents per share . . . Completing a merger announced in September 2002, **Geodesic Systems Inc.** has acquired **InCert Software Corp.** with the intention of offering solutions for application reliability. Philip Spertus will remain Geodesic's president and CEO, while Michael Torto, InCert's president and CEO, is leaving the company. ▮

CALENDAR OF EVENTS

Macworld Conference & Expo — Jan. 6-10
San Francisco
IDG WORLD EXPO
www.macworldexpo.com

Oracle AppsWorld — Jan. 19-22
San Diego
ORACLE CORP.
www.oracle.com/appsworld/sandiego

LinuxWorld Conference & Expo — Jan. 21-24
New York
IDG WORLD EXPO
www.linuxworldexpo.com

Integrate 2003 — Jan. 28-29
Burlingame, Calif.
OBJECT MANAGEMENT GROUP
www.integrate2003.com

Wall Street On Java Technology — Feb. 4-5
New York
LIGHTHOUSE PARTNERS INC. & FLAGG MANAGEMENT INC.
www.javaonwallstreet.com

VSLive — Feb. 9-14
San Francisco
FAWCETTE TECHNICAL PUBLICATIONS
www.vslive.com/2003/sf

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

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